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THESIS

BRAVING THE SWARM: LOWERING ANTICIPATED GROUP BIAS IN INTEGRATED FIRE/POLICE UNITS FACING PARAMILITARY TERRORISM

by

Sean S. Newman

March 2011

Thesis Advisor:	Robert Bach
Second Reader:	Christopher Bellavita

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The Fire Department of the City of New York (FDNY) has responded to the consequences of terrorist incidents for decades, but global trends in active-shooter terrorism may force firefighters to operate in an active, hostile environment, and not just in the aftermath of attacks. In assault-style terrorism, a swift-moving, networked enemy combines small-arms with explosives or accelerants, causing extensive fires and smoke conditions, further endangering victims or hostages. To continue its position as a lead innovator in the national fire service, the FDNY must create new strategies and collaborations to frame its participation in swarm-like terrorist attacks, requiring a plurality of expertise from the across the emergency-responder spectrum. In light of this emerging threat, the all-hazards approach is no longer adequate. The answer to Mumbai-style attacks may require combined fire/police units. The units can only succeed with an understanding of group bias, which must be attenuated or managed for the integrated unit to function effectively.

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BRAVING THE SWARM: LOWERING ANTICIPATED GROUP BIAS IN INTEGRATED FIRE/POLICE UNITS FACING PARAMILITARY TERRORISM

Sean S. Newman
Captain, Fire Department of the City of New York
B.A., Stony Brook University, 1991

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NAVAL POSTGRADUATE SCHOOL
March 2011

Author: Sean S. Newman

Approved by: Robert Bach
Thesis Advisor

Christopher Bellavita
Second Reader

Harold A. Trinkunas, PhD
Chair, Department of National Security Affairs

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ABSTRACT

The Fire Department of the City of New York (FDNY) has responded to the consequences of terrorist incidents for decades, but global trends in active-shooter terrorism may force firefighters to operate in an active, hostile environment, and not just in the aftermath of attacks. In assault-style terrorism, a swift-moving, networked enemy combines small-arms with explosives or accelerants, causing extensive fires and smoke conditions, further endangering victims or hostages. To continue its position as a lead innovator in the national fire service, the FDNY must create new strategies and collaborations to frame its participation in swarm-like terrorist attacks, requiring a plurality of expertise from the across the emergency-responder spectrum. In light of this emerging threat, the all-hazards approach is no longer adequate. The answer to Mumbai-style attacks may require combined fire/police units. The units can only succeed with an understanding of group bias, which must be attenuated or managed for the integrated unit to function effectively.

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LIST OF ACRONYMS AND ABBREVIATIONS

CBRNE	Chemical, Biological, Radiological, Nuclear, or Explosive (Hazmat)
CIIM	Common Ingroup Identity Model
COTS	Commercial-off-the-Shelf
CRS	Congressional Research Service
CRV	Critical Response Vehicle (NYPD)
CTDP	Center for Terrorism and Disaster and Preparedness (FDNY)
DHS	Department of Homeland Security
EMR-ISAC	Emergency Management and Response – Information and Analysis Center
ESU	Emergency Services Unit
FDNY	Fire Department of the City of New York
FEMA	Federal Emergency Management Agency
GPS	Global Positioning System
IED	Improvised Explosive Devices
IID	Improvised incendiary devices
LeT	Lashkar-e-Toiba
MS	Mortality Salience
NDMC	New Delphi Municipal Council
NYCRR	New York Codes, Rules and Regulations
NY-TF1	New York Task Force 1 (FEMA)
NYPD	New York City Police Department
OEM	Office of Emergency Management (NYC)
SIT	Social Identity Theory
SME	Subject Matter Expert
SOC	Special Operations Command (FDNY)
SWARM	Syndicated, Water-Enabled, Anti-Siege, Response Matrix (units)
SWAT	Special Weapons and Tactics
UPS	United Parcel Service
USA	Rurban Search and Rescue
USFA	United States Fire Administration
TMT	Terror Management Theory

TNT	Trinitrotoluene
WMD	Weapons of Mass Destruction

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My two young boys, Matthew and Theodore, who have taught me so much about what is important in this life; may your generation not require terrorism studies.

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I. INTRODUCTION

A. INTRODUCTION

The Fire Department of the City of New York (FDNY) has responded to the consequences of terrorist incidents for decades, but global trends in active-shooter terrorism may force firefighters to operate in an active, hostile environment, and not just in the aftermath of attacks. In assault-style terrorism, a swift-moving, networked enemy combines small-arms with explosives or accelerants, causing extensive fires and smoke conditions, further endangering victims or hostages. To continue its position as a lead innovator in the national fire service, the FDNY must create new strategies and collaborations to frame its participation in swarm-like terrorist attacks, requiring a plurality of expertise from across the emergency-responder spectrum. In light of this emerging threat, the all-hazards approach is no longer adequate. The answer to Mumbai-style attacks may require combined fire/police units. The units can only succeed with an understanding of group bias, which must be attenuated or managed for the integrated unit to function effectively.

B. PROBLEM STATEMENT AND RESEARCH QUESTIONS

1. Problem Statement

With active-shooter or paramilitary-style terrorist strikes, increasingly called "Mumbai-style" attacks, the consequences of terrorism can no longer be neatly classified into traditional hazardous materials' categories that include chemical, biological, radiological, nuclear, or explosive (CBRNE). This new form of terrorism is a direct challenge to all-hazards emergency response doctrine and single-agency mitigation strategies. Currently, compartmented standard operating procedures for first responders do not adequately address active-shooter terrorist attacks when fire and explosives are combined with conventional firearms. To face this new threat, police and fire departments need more than coordination, but better integration. A proposed solution to

the challenges related to active-shooter terror may be a joint fire/police response unit of "pre-first responders" who can enter a hostile environment ahead of traditional first responders. This vanguard unit could simultaneously engage, or at least delay, armed terrorists in a fire or smoke environment to extract civilians or hostages who are threatened by any combination of firearms, fire, heat, smoke, explosives, or collapse. For the proposed vanguard unit, which will be made up of traditional rivals, to succeed, an examination of identity and group bias is necessary.

2. Research Question

1. As terrorists shift to quick, coordinated strikes from network-based units, would fire and police departments best meet this threat with a dual-agency network of well-organized, agile response units of their own?
2. How can an inquiry into military swarming strategies better prepare emergency responders for paramilitary terrorism?
3. Is the all-hazards approach as a terrorism mitigation strategy still valid for first responders during complex, active-shooter attacks?
4. How can the latest psychological theories in group and organizational bias be used in the creation of joint fire/police units?

3. Significance of Research

Active-shooter terrorist attacks are not random. When several attacks are studied operationally, patterns emerge that can be useful to fire service preparations for such attacks. Another pattern, though disturbing, suggests that these incidents should be concluded as quickly as possible because negotiations are not the primary aim of the attackers. The terrorists are less concerned with their demands, if any, being met than with maximizing casualty counts and media exposure.

If successful, joint fire-police units created specifically for complex, active-shooter terrorist attacks would serve as a catalyst for better agency collaboration. Joint fire-police units will not only thrive operationally, as historical group biases dissolve, but possibly be a tipping point, fostering a new era of broad interagency cooperation. Studies of identity and group bias would help leaders anticipate problems and correct behavioral and cultural problems before they occur. "Our distrust is very expensive," Ralph Waldo Emerson once said (Emerson Central, 2010). The paper is not suggesting a department-

wide merger but tests the idea of small, elite inter-agency units to maximize first responder effectiveness in one specific type of incident.

For emergency responders, theories based on real-world observations are a good complement to theories postulated from controlled studies. The response issues related to complex, swarm-like terrorist attacks will require a level of collaboration and trust yet unseen in the New York City emergency response community. Despite the complexity that surrounds these attacks, the FDNY must develop an interagency framework before an attack occurs; this ultimately will mean the difference between life and death for innocent New Yorkers and the people that have dedicated their careers to protect them.

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II. METHODOLOGY AND INTERVIEWS

A. METHODS TRIANGULATION

Data for this thesis was collected from a variety of source types and methods: primarily a literature review, case studies and the phenomenological research method for interviews, in an approach called methods triangulation (Johnson, Burke & Christensen, 1997). The intent of this research is to present a problem that emergency responders face (paramilitary terrorism), provide an acceptable "intervention" (Hocevar & Wollman, 2008), such as integrated response units, and forecast one debilitating impediment to the solution, namely group bias, before a tragedy occurs—at least for New York City emergency responders.

The historical examples on complex active-shooter incidents, whether motivated by crime or terrorism (Mumbai, Beslan, Columbine, and Freddy's Fashion Mart), will be presented through a specific type of case study called structured-focus comparison in which the researcher looks for parallels or commonalties in the cases. It is important that the examples are similar but not indistinguishable, as it is the slight variances in the incidents that are most revealing. Data was collected from academic literature (mostly abstracts) or media sources. The brief snapshot on biological and military examples of swarming were compiled from books and articles. The examination of group bias as it relates to a proposed integrated unit, the crux of this paper, was based mostly on articles in psychology journals, and augmented with input from interviewees, who are not experts in cognitive psychology, but who still provided relevant insights.

B. PHENOMENOLOGICAL RESEARCH STUDY

Research, as it relates to the viability a joint fire/police unit, was made through qualitative research design, specifically, through the phenomenological research method meant to "understand people's perceptions, perspectives, and understandings of a

particular situation" (Leedy & Ormrod, 2005, p. 139). In this inquiry, the "situation" is the idea of a joint unit to address a very specific threat, namely a Mumbai-type or siege-style terror attack.

Phenomenology, whose origins can be traced back to the philosophical and epistemological works of Immanuel Kant and Georg Wilhelm Friedrich Hegel, was put forth by German philosopher Edmund Husserl (1859–1938), who named his method phenomenology, or the science of "pure phenomena." Husserl believed, "to arrive at certainty, anything outside immediate experience must be ignored, and in this way the external world is reduced to the contents of personal consciousness," according to an article in the *International Journal of Qualitative Methods* (Groenewald, 2004, p. 4). The article further explained: "A researcher applying phenomenology is concerned with the lived experiences of the people" (p. 5). For Husserl, it came down to the experience, which is a fitting avenue of inquiry for a topic that can only be understood from the viewpoint of experts in the field on emergency response.

Phenomenological research is largely based on open and "unstructured" dialogue (Leedy & Ormrod, 2005, p. 139), which closely resembles an informal conversation. Strong emphasis is placed on the subjects' personal perspectives and interpretations (Lester, n.d.). The method is meant to promote practical theory, supporting or challenging policy and action (Lester, n.d.); in this case, the inquiry assessed a policy vacuum as no joint fire-police unit exists in this specific context of terrorism preparedness.

C. THE INTERVIEW PROCESS

The fluidity of the conversations encouraged both interviewer and interviewees to explore issues in either a wide breadth or in a highly-focused manner, when appropriate, but the main purpose of the interviews was to achieve "minimum structure and maximum depth" (Lester, n.d.). Interviewees were asked a list of prepared questions, but the organic nature of the conversations, where the interviewer freely offered his own opinion and insights at certain points to gently steer the dialogue, usually brought more revelations than the literal answers to the questions. This is consistent with the

phenomenological view that researchers cannot fully divorce themselves from their own preconceptions or assumptions, nor should they "pretend otherwise" (Groenewald, 2004, p. 7). Open-ended questions, along with interviewer's ability to adjust the direction of the conversation based on the answers given, allowed for far greater creative and original responses than would have been achieved in a multiple-choice survey or more confined closed-question inquiry.

D. CODING

Interview analysis is expected to be "messy" (Lester, n.d.), as input may not always fit into neat categories, but the researcher must still strive to make sense of the data. After breaking down the transcripts into small segments and identifying common themes, information gained from the interviews was pooled and categorized, a quantitative research technique called coding. Codes were not predetermined prior to interviews but were assigned as themes emerged, which is consistent with "inductive" coding, defined as categorization after the data is examined (Hocevar & Wollman, 2008).

The idea of joint fire-police counter-terror units in the face of active-shooter assaults is original, making research problematic. With so little academic literature devoted to this topic, interviews of subject matter experts (SMEs) in emergency response seemed the most appropriate information source to interpret this emerging mode of terrorism. The four interviewees (three fire chiefs and one counterterrorism expert from a municipal police department) brought unique perspectives from their sub-specialties to the study.

Data analysis from interview transcripts followed four steps (Leedy & Ormrod, 2005, p. 140):

1. Identify statements that relate to the topic.
2. Group statements in "meaning units" (coding).
3. Seek divergent perspectives.
4. Construct a composite.

Three of the four interview transcripts were coded into three cascading categories (note: the fourth interview was not recorded nor coded as the dialogue only pertained to

the Freddy's Fashion Mart incident). First, remarks where categorized into four emergency preparedness categories (prevention, preparedness, response, and recovery). Due to the nature of the fire service's mission and the dual-unit proposal, over 90 percent of comments fell into either response or preparedness. Then, remarks were coded into about 30 categories (e.g., training/education, Mumbai threat, preplanning, etc.), and then the data was sub-coded into slightly more specific parts (e.g., breaking point, general training, joint training, time, etc.), which totaled over 50 unique categories. Not every interviewee touched on every code or sub-code. Sub-codes provided more detailed descriptions of interviewees' statements, and the most applicable ones are inserted as quotes or paraphrases throughout the paper.

The graph of total codes from all three interviewees, presented as an appendix at the end of the paper, totals 262 comments, but not all codes are unique. Some entries were listed more than once, depending on whether the remark overlapped with two or more codes (e.g., active-shooter with fire or enemy adaptability) or sub-codes (e.g., response or preparedness). In all, 129 unique comments were coded.

E. THE INTERVIEWEES

The four interviewees were selected based on their expertise in a narrow subset of firefighting or law enforcement related to terrorism or disaster preparedness. The interviews, which were conducted in person, took between 30 and 75 minutes. Interviews were recorded with the voice memo application on an iPhone, transferred to a laptop, and transcribed from iTunes to a Microsoft Word document, and eventually collated on an Excel spreadsheet.

The following is a list of sample questions:

- As terrorists shift to quick, coordinated strikes from network-based units, would the FDNY and the NYPD best meet this threat with a dual-agency network of well-organized, agile response units of their own?
- How does the department need to prepare for active-shooter terrorist attacks? What are we doing well? Not doing well?

- If more than one attack occurs simultaneously, is the borough command system adequate?
- Do you think it is possible to simultaneously fight fires and engage terrorists to free hostages or other threatened civilians? Would we have to go beyond the idea of tactical paramedics to firefighters as full members of an assault force?
- Can we ignore people trapped by fire and smoke because it is too dangerous for firefighters? What are our operational limits at Mumbai-style attacks?
- How do you feel about a joint FD/PD unit? What are some interagency alternatives?

The subject matter experts (SME) interviewed include: Assistant Chief Joseph W. Pfeifer (FDNY); Battalion Chief Joseph R. Downey (FDNY); an anonymous counterterrorism expert from a municipal police department; and Deputy Chief Michael E. McPartland (FDNY), who was not coded.

The following is a more detailed look at the subjects and their interviews:

1. FDNY Assistant Chief Joseph W. Pfeifer

Joseph Pfeifer, an expert in fire service counterterrorism preparedness, has commanded the FDNY Center for Terrorism and Disaster and Preparedness (CTDP) for the past seven years. Pfeifer, best known as the first-to-arrive FDNY chief at the World Trade Center on 9/11, combines his almost 30-year career in the fire service with an extensive graduate-level education, which includes degrees from the Harvard Kennedy School of Government and the Naval Postgraduate School.

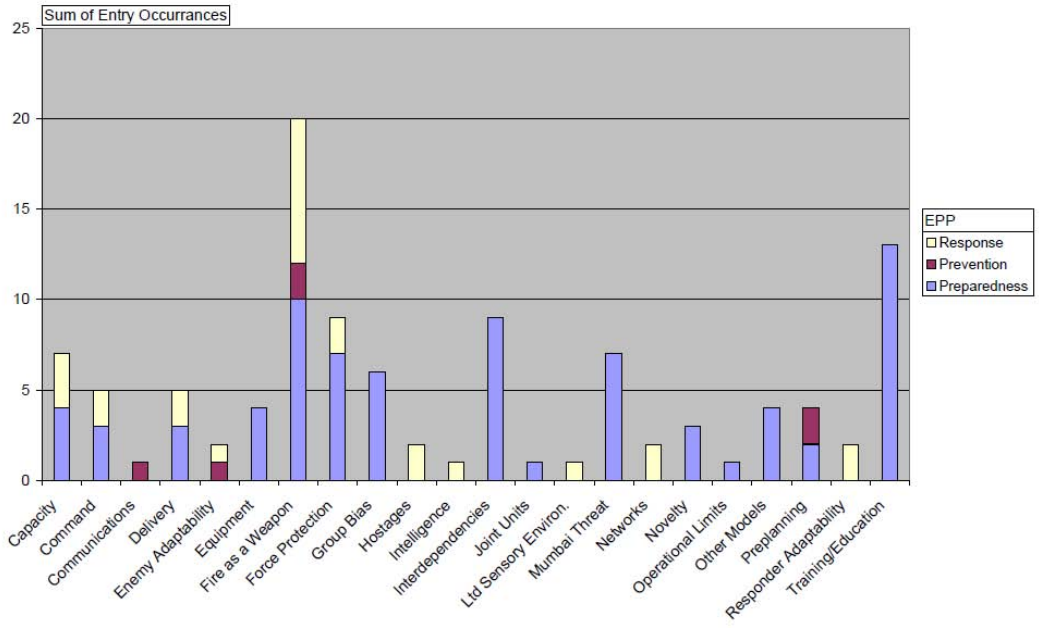

Figure 1. Coding of Joe Pfeifer's Comments

The coding reveals that Joe Pfeifer spoke mainly on training and education, interdependencies, and, most frequently, fire as a weapon. Chief Pfeifer sets the tone of all three coded interviews with an emphasis on training and education. Unique to his interview, Pfeifer's comments on networks, novelty and adaptability were not prolific, but had a disproportional impact on topic examinations later in the paper.

2. FDNY Battalion Chief Joseph R. Downey

Joseph Downey, who currently works in the Rescue Battalion, has served in the FDNY for 26 years. Besides his regular duties in FDNY Special Operations Command (SOC), Downey heads the FDNY component of New York Task Force 1 (NY-TF1), NYC's Urban Search and Rescue (USAR) unit, a disaster emergency response unit consisting of FDNY firefighters and NYPD personnel. NY-TF1 is run through the New York City Mayor's Office of Emergency Management (OEM), and the taskforce program is coordinated nationwide by the Federal Emergency Management Agency (FEMA). NY-TF1 has deployed to natural disasters and other emergencies about 10 times in 20 years, most notably to New Orleans during Hurricane Katrina in 2005 and to Haiti in the

aftermath of the 2010 earthquake. Joe Downey, who alternates command of NY-TF1 with a police counterpart, is uniquely qualified to comment on integrated fire-police units as the taskforce is only example of joint FDNY/NYPD group.

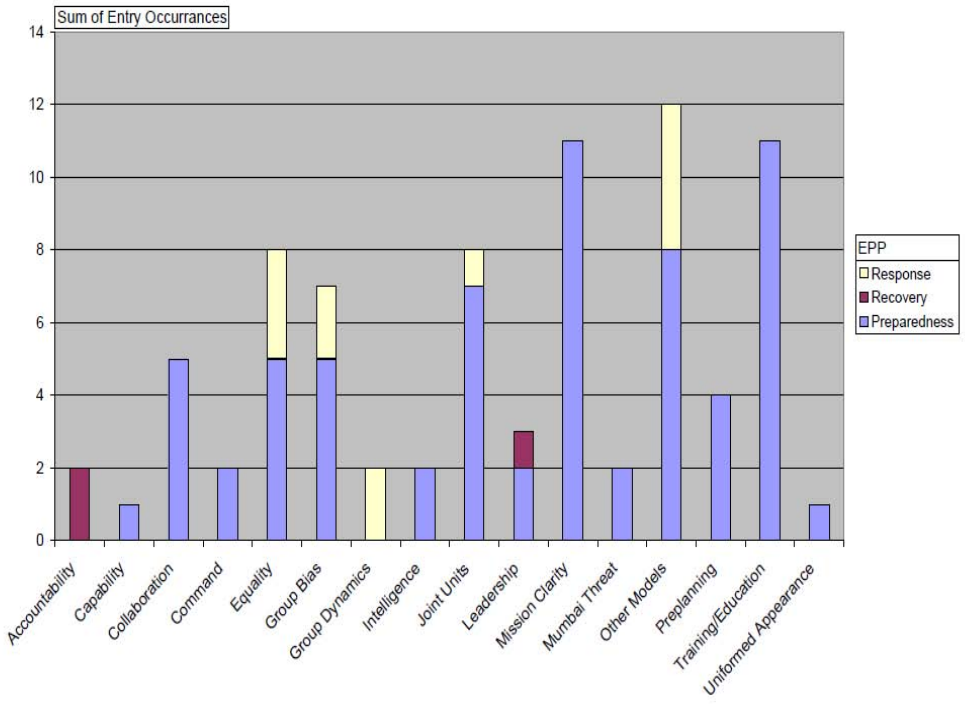

Figure 2. Coding of Joe Downey's Comments

A sample of the most common 17 codes present in the interview show that Joe Downey's responses focused mainly on NY-TF1 (as "other models") and the idea of a joint unit, consistent with his expertise. Based on the frequency of comments, the histogram shows that Joe Downey believes in the importance of training and education. With his experience with an interagency unit, the number on comments on group bias and equality show how well matched his experiences fit with the concept of a joint fire/police assault unit. What the histogram does not reflect is how relevant Downey's remarks were to the inquiry on group bias in Chapter V.

3. Anonymous Law-Enforcement Source

The counterterrorism expert for a municipal police department agreed to offer his insights on condition of anonymity.

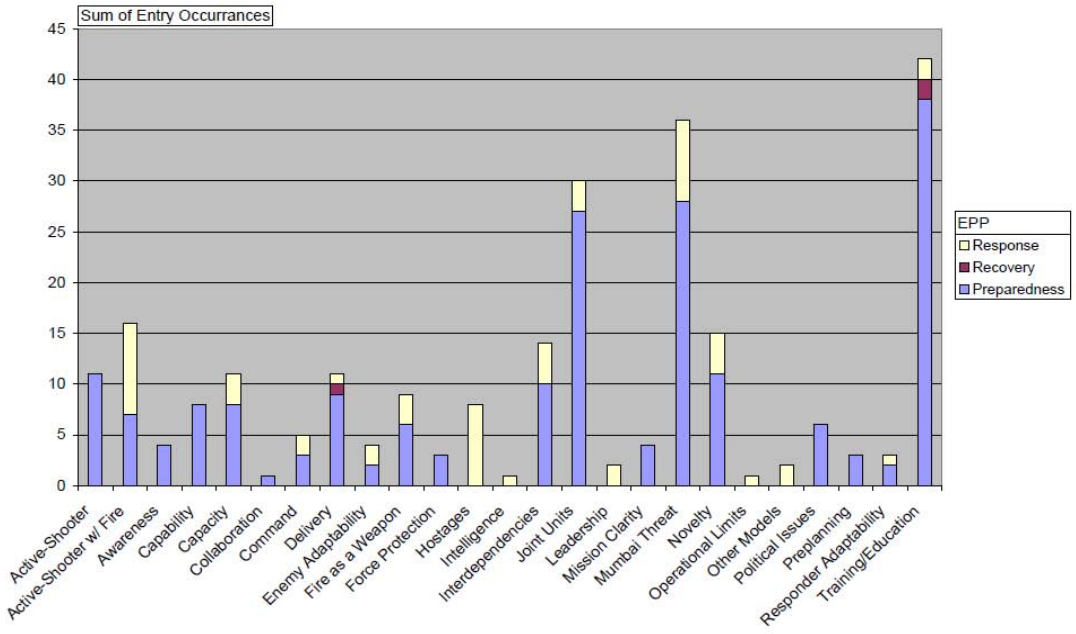

Figure 3. Coding of Comments (Anonymous Police Source)

The anonymous source has served almost 20 years in a major urban police department. The source has extensive counterterrorism training and experience. His willingness to be interviewed provided an essential component to this research. This paper would not be complete without the input from a veteran law enforcement official.

Similar to the fire chiefs' interviews, the anonymous police interviewee focused predominately on training/education. As a member of law enforcement, his comments gravitated towards the Mumbai threat. The spike in joint-unit entries is attributable to the interviewer's line of questioning. Similar to Joe Pfeifer, the source stressed an honest assessment of delivery of agency assets, or time considerations, which is listed as a middle entry for both interviewees.

4. FDNY Deputy Chief Michael E. McPartland

Mike McPartland is a 31-year veteran of the FDNY, who currently works in Division 1 in lower Manhattan and has worked most of his career in Harlem and the Bronx. Though Mike McPartland's experience and expertise is evident, he was asked to speak on the narrow subject of his experiences as the first-to-arrive fire officer at the Freddy's Fashion Mart massacre in December 1995. This massacre was a lesser-known incident where NYC emergency personnel faced an armed gunman, hostages, fire, and smoke after a racially-charged protest turned violent. Chief McPartland's interview was not recorded, nor was the transcript coded, due to logistical issues and the fact that the interview subject was confined to the Freddy's incident.

F. GENERAL FINDINGS FROM THE THREE CODED INTERVIEWS

Interviewees were unanimous in their belief that the concept of joint fire/police units is viable in combating paramilitary-style terrorism involving fire as a weapon. All respondents gave serious thought to organizational limits, including capacity, capability, and delivery (time). An expeditious response, more than capability/capacity, was more of a concern for emergency responders, especially if multiple attacks occur simultaneously. The need to train all firefighters and police officers (from command level to operating units), to at least the awareness level regarding the Mumbai-style threat, was a surprise finding but a very powerful concept.

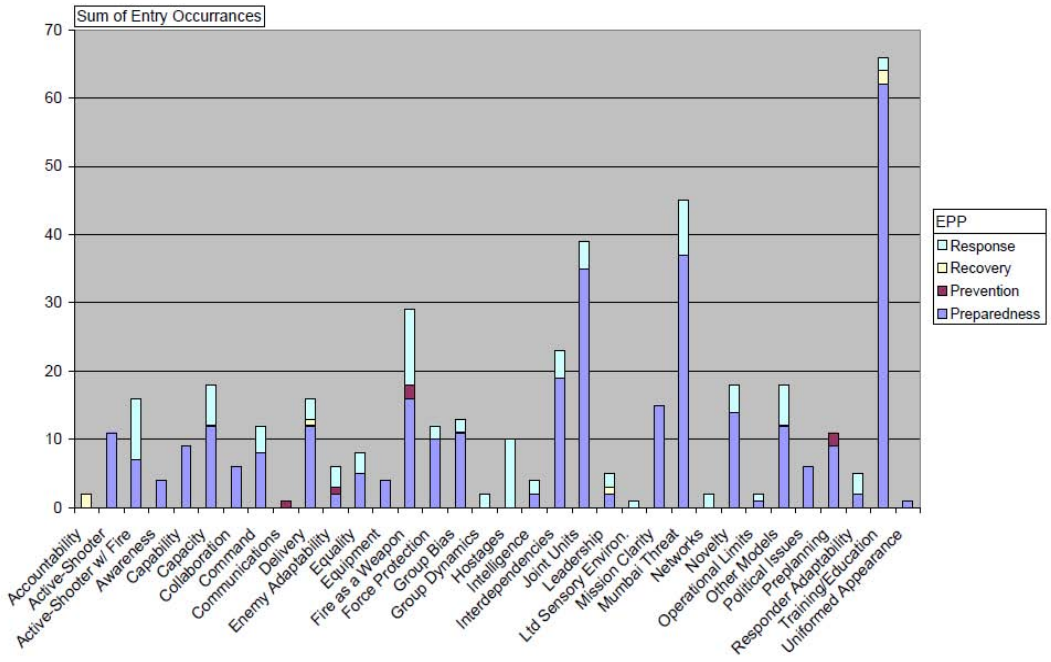

Figure 4. Coding of Comments From Three Primary Interviewees

When all 262 multiple entries are listed in a common graph (see Appendix A) for the three primary interviewees, the most frequently-discussed topics become evident, as listed below:

- Training/education (clearly the highest frequency)
- The Mumbai threat
- Joint units
- Fire as a weapon
- Interdependencies

The graphs match well with the expertise of the speakers and the line of questioning, which was adjusted slightly for each interview. As far as commonalties, both Pfeifer and the police source agree that NYC emergency responders must consider breaking points, or thresholds that would meet the limits of respective agencies' abilities. "We need an honest assessment of capacity, capabilities and delivery," Pfeifer said. The two mentioned independently that terrorists can easily shift from improvised explosive

devices (IEDs) to improvised incendiary devices (IIDs), and that a Mumbai-style attack in NYC would be too quick and dynamic for current response matrices.

The key finding, which may or may not, contrast with the idea of a dedicated interagency response unit, calls for respective agency-wide awareness and training for a Mumbai-style event, from the command to unit level. "Whether its borough command or a deputy chief, I don't think it will make a difference," said Joe Pfeifer, who took a top-down approach, "what matters above all is situational awareness at the citywide level." The police source's primary aim was to work from the ground up: "[My] first choice would be to train up all members of service." The police source envisioned patrol officers engaging terrorists quickly instead of using a defensive containment strategy. Both men are addressing the same issue from different angles (command versus field), in consideration of intense time limitations.

Joe Pfeifer also said:

> I think, as I've talked about network command, or the ability to connect the operation centers, that two things happening: the hastily-formed network at the scene, where responders need to figure out what to do…within incident command structure. And [two], we have the ability for networks, or EOCs, to connect and to give a large picture of what's happening at the 'local scene.' Without that, you are lost and will have no idea if its one terrorist, or ten terrorists, or whatever the case may be.

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III. CASE STUDY, TRENDS, AND ISSUES

A. CASE STUDY OF ACTIVE-SHOOTER INCIDENTS INVOLVING FIRE

The most notable examples of siege- or barricade-style terrorist assaults in recent years, which include firearms, fire, and explosives, are the Mumbai terrorist attacks in November 2008 and the Beslan School Massacre in Russia that occurred in September 2004. Also, the Columbine School massacre received a cursory examination due to its operational significance. Lastly, an incident that occurred in NYC 15 years ago, known at the Freddy's Fashion Mart massacre (fire), will also be briefly explored. Columbine and Freddy's may not qualify as acts of terrorism, by strict definitions, but to emergency personnel responding to these incidents, caused by emotionally disturbed persons as opposed to rationally-minded terrorists, the issues are identical.

1. Mumbai Attacks, 2008

In November 2008, 10 men from the Pakistan-based terrorist group Lashkar-e-Taiba (LeT) executed a series of commando-style attacks in Mumbai, killing almost 200 people and wounding over 300 (RAND, 2009). The group targeted a mix of critical infrastructure and high-profile, soft targets, including hotels, a café, and a Jewish center. During the three-day ordeal, first responders were directly targeted with automatic weapons, grenades and IEDs (FDNY, The Mumbai Terrorist Attack, 2009).

From a geo-political perspective, the success of the Mumbai attacks may lead to more terrorist events in the future, making all Western targets more vulnerable, especially New York City. There are several geographic, cultural, and economic similarities between NYC and Mumbai suggesting that an attack may occur in the Big Apple. Mumbai is considered India's commercial and entertainment center, and the nation's "Wall Street," and even its Milan, referring to its thriving fashion industry (Rand, 2009, p. 1). NYC, the home to eight million inhabitants, is the de facto capital of American culture and media, with hundreds of cultural and economic icons, including the New York Stock Exchange, Times Square, the SoHo retail fashion district, corporate

headquarters, and several museums. Also, the NYC area, technically an archipelago, is easily accessible from the sea (similar to Mumbai), providing terrorists with countless entry points to avoid police at bridge and tunnel crossings; limited roadways connecting the boroughs could also slow emergency responders. While testifying before the House Committee on Homeland Security, New York City Police Commissioner Raymond W. Kelly said that the similarities of NYC compared to Mumbai, described as dense, relatively-unprotected urban areas, could allow terrorists to establish strategic choke points to impede responses (Times of India, 2009).

During the Mumbai attacks, LeT knew very well that an attack on Western targets in India would intensify media coverage, which experts, such as Bruce Hoffman, for example, repeatedly state is terrorists' primary goal. While commenting on the Mumbai attacks, the United States Fire Administration's (USFA) Emergency Management and Response—Information and Analysis Center (EMR-ISAC) said, "They (LeT) were able to use a small number of attackers to achieve a spectacular event" (EMR-ISAC, 2008). Due to the "spectacular" success of Mumbai, from the terrorists' perspective, the fire service must prepare as more attacks are likely. "Given that the terrorists seek to maximize the psychological impact of the attacks, we can expect that future attacks will aim at both large-scale casualties and symbolic targets," according to a Congressional Research Service (CRS) report, "The jihadists have stated, and the Mumbai attack demonstrates, the determination of the terrorists to seek high body counts, go after iconic targets, and cause economic damage" (CRS, 2009, p. 21).

Despite the gunfire and other dangers, the Mumbai Fire Brigade continued to rescue trapped hostages and fight fires in the hotels through interior attacks, and by using exterior ladders placed at windows to extract hostages. "Mumbai fire chief Anil Sawaant and senior firefighter Pratab Karguppikar were honored for braving gunfire and flames during repeated trips in a cage attached to a fire truck ladder to rescue dozens trapped on the hotel's higher floors," according to an Associated Press story: "The men used their axes to break through the windows and bring groups of hotel guests and staffers down to

safety" (Peachey, 2008). The fire chief described his experience: "Luckily for us, he [the terrorist] did not turn in our direction and we continued fighting the fire" (The Hindu, 2008).

Also, with no equipment or training to operate in a combat situation, Mumbai firefighters fought an interior attack on the intentionally-set hotel fires with a commando escort—within earshot of gunfire. "It was not easy to work in such conditions," an anonymous firefighter said, "there is a risk while fighting fires but in this case there was the added risk of bullets" (The Hindu, 2008). As military commandos and police were moving hostages through back exits, the Mumbai Fire Brigade was tasked with saving guests whose rooms were ablaze (IBN Live, 2008), despite the possibility that the firefighters would be discovered by the terrorists.

In response to the Mumbai attacks, firefighters from the Mumbai Fire Brigade are being trained to provide security. Firefighters were trained as "commandos" to provide protection at the 2010 Commonwealth Games in India (Schlink, 2009), which hosted about 5,000 athletes from former and current British colonies. "We feel that firemen who are well-built can be selected for commando training so that they can offer initial resistance," said New Delphi Municipal Council (NDMC) Chairman Parimal Rai (Schlink, 2009).

At the regional level, India is also creating firefighter assault forces. Jija Hari Singh, the Director General of Police of India's Karnataka State Fire and Emergency Services, has formed a team of "Fire Commandos." "We have decided to form a commando force in the Fire Services' department to cope with any Mumbai-like situation," Mr. Singh told the New Indian Express, "we have already trained a batch of 35 new recruits and another batch is already undergoing training" (Ammembala, 2009). The fire commandos are being trained to fight fires, handle collapses, and mitigate hazardous-materials' incidents under combat situations. John Giduck, a consultant to law enforcement, federal agencies and the military, and the author of *Terror at Beslan: a Russian Tragedy with Lessons for America's Schools,* makes a statement, though controversial, that is consistent with the expanding role of Indian firefighters. He states:

"The single most crucial aspect of preparedness for all of America's tactical operators, firefighters and paramedics is the need to train to rescue and to kill (if necessary) to save lives" (Giduck, 2005).

2. Beslan School Massacre, 2004

In 2004, Chechen separatists used a barricade-style attack on a Russian school in a small town in the North Caucus region. On September 1, the traditional start of the school year, called the Day of Knowledge, about 50 Islamist terrorists stormed Belsan's School Number One in North Ossetia-Alania (Giduck, 2005, p. 115). The terrorists took advantage of the large family turnout on the first day of school to maximize their hostage count (about 1,200) and herded most of the hostages into a small gymnasium that was then rigged with bombs (McDaniel & Ellis, 2009, p. 24). The siege lasted three days, and in the end, almost 400 people were killed, with over half children, and 700 were wounded (Giduck). *Esquire* magazine writer C. J. Chivers called the Beslan attack "a horrifying innovation in human brutality" (Chivers, 2007).

The threat of firearms and explosives delayed first responders and the military from gaining access to over 1,000 hostages, who were kept in inhumane conditions during the ordeal. The siege concluded with explosions and a large fire that caused the gymnasium, where most of the hostages were held, to collapse. It is still unclear how the roof of the gym caught fire, but implications for the fire service are apparent. About 160 of the hostages were killed by fire—more than half of the total (Klussmann, 2005). Other reports concurred with the primary cause of death; the explosion, and the subsequent fire and collapse, caused the majority of the "human injury" (Chivers, 2007). Regardless of the cause, fire has complicated many barricade hostage events.

Numerous reports criticize the initial fire response. Fire units, who arrived two hours into the incident, only brought 53 gallons of water and lacked fittings to connect pumpers to Beslan hydrants (Murphy, 2005). "No matter what ignited the terrible blaze, a bungled firefighting effort may have led to more deaths. Not only did firefighters hold back in the face of the gunfire, but they initially also didn't have enough water,"

according to a *Los Angeles Times* editorial (Murphy, 2005). Other reports claim that no firefighting equipment was staged and few ambulances were available (Chivers, 2007).

The timing of the explosions on the third day could not have been worse for paramedics from the Russian Ministry for Emergency Situations. After negotiations with Russian authorities, the terrorists agreed to allow bodies of those killed on the first day to be removed from where they were piled outside a window. When the explosions went off, the terrorists may have believed that the body removals were a diversion meant to place commandos in a "strategic position," and that an attack on the school was imminent (Ferency, 2009). The terrorists fired on the two paramedics that were removing the bodies, and one was killed.

The FDNY can learn a valuable lesson from a review of Russian special forces during the Beslan siege. "Compounding these operational mistakes was a strategic failure on the part of Russian security forces to become a learning organization," said Peter Forster, a professor of political science at Penn State, in the journal *Homeland Security Affairs*, "the Beslan crisis exposed the limits of integrating prior experiences to institutional learning within Russian intelligence and security forces, thus precluding enhanced preparedness" (Forster, 2006, p. 2).

3. Columbine School Massacre, 1999

At the Columbine High School shooting in 1999, the atrocities of two deranged teenagers lacking a coherent political cause may not fit the strict definition of terrorism, but that distinction is not as important to the first responders who faced assault-rifle fire, and the possibly of secondary devices, incendiaries, and explosives, including car bombs. When it was over, 13 people were killed (12 students and a teacher), and dozens were seriously injured (Toppo, 2009). "Terrorist-style assaults compound the unusual risks associated with a major incident," according to a United States Fire Administration (USFA) report on Columbine. "Gunfire, incendiaries, explosives, and secondary devices magnify the risks to responders. There is a great likelihood of mass casualties and of hostage taking, both of which compound tactical response and operations," the USFA report stated (USFA, 1999, p. 2).

The USFA called for joint FD/PD units immediately after the Columbine incident. "It would have been of great benefit if the SWAT teams, EOD technicians, and fire/EMS personnel at Columbine had been able to train in joint operations" (USFA, p. 31). The paper mentioned that one benefit of joint operations is that medical personnel or firefighters directly assigned to SWAT units could immediately treat law-enforcement casualties.

The USFA report proposes improvements to fire and police response at active shooter, multi-hazard events, including training specialized fire department personnel, and a need for better understanding of special law enforcement units, and how they will impact fire/EMS operations. "This is best accomplished through joint planning and training between law enforcement and fire and EMS services" (p. 33). According to the anonymous police source for this paper, one of the biggest lessons related to the Columbine incident for law enforcement is the need to move quickly: "Think about Columbine, one of the biggest arguments, and some of the biggest lawsuits today, are due to the fact that they waited" (anonymous personal communication, October 9, 2010).

The Columbine shooting is notable for both what occurred, as well as for what may have occurred. The two boys planned the attack for more than a year, and made over 100 bombs, including gasoline-based incendiary devices, which were placed in their vehicles. Some experts claim these were meant to kill first responders (USFA, 1999). Also, the two boys placed propane IEDs in the school's cafeteria and kitchen with the intention of killing hundreds of students (Toppo, 2009). Fortunately, for the survivors and response personnel, none of the poorly-constructed devices detonated.

4. Freddy's Market Attack, 1995

In December 1995, Freddy's Fashion Mart, a clothing store in the Harlem neighborhood of Manhattan, became the horrific scene of a racially-motivated, anti-Semitic assault by a 51-year-old laborer which ended with eight people dead, including the gunman (MacFarquhar, 1998, p. B14). The attack targeted a Jewish store owner, who refused to renew a sublease to a locally-owned record store (MacFarquhar, 1998, p. B14). Ironically, the building was owned by a nearby church, the United House of Prayer for

All People, but that fact was lost on protesters and the gunman, who picketed Freddy's for weeks leading up to the incident. Freddy's massacre is notable as emergency responders faced gunfire, incendiaries, fire and intense smoke as they extinguished fire, and attempted to rescue the hostages.

In 1995, FDNY Deputy Chief Mike McPartland was a captain and the company commander of Ladder Company 19 in the Bronx. On the day of the Freddy's incident, McPartland was working one tour in Engine Company 59, which was the first FDNY unit to arrive on the scene. McPartland and his men responded to a reported fire on 125th Street, and the only critical information he received from dispatchers was to "be advised, PD activity in the area" (personal communication, January 17, 2011). When the engine reached the intersection of the incident, McPartland knew immediately that he had a legitimate fire (personal communication, January 17, 2011). Patrolmen stationed on the corner tried to block the FDNY vehicle from getting through, but the fire engine pushed through the barricade anyway and found a working hydrant, as the officer and firefighters knew that they had to address the fire and thick smoke pouring out the building if they were going to save anyone trapped inside.

While using the store fronts as cover, McPartland and his team crawled to the front of the building, as police fired into the store. Due to the advanced stage of the fire in Freddy's, which occupied the first floor of a two-story building, McPartland suspected that the gunman was already dead or incapacitated. He then ordered his crew to stretch a hoseline to the front of the store, where they began their attack on the fire. NYPD Emergency Services Unit (ESU) police officers, who initially discouraged McPartland and his crew from operating, eventually said, "We'll give you cover," and positioned themselves to either side of the nozzle team and fire officer, protecting the fire crew with bulletproof shields until the heat and smoke forced the police officers to retreat. With no police protection, McPartland lead his team into the store to reach the heart of the fire, and even found the dead gunman, until the FDNY incident commander ordered Engine 59 out of the building due to indications of a possible building collapse. When conditions allowed firefighters to return, the majority of hostage victims were found in the basement, overcome by smoke inhalation (personal communication, January 17, 2011).

Reflecting on the Freddy's incident, Chief McPartland said that police and fire commanders did not share a common command post, and that a lack of information while responding in, and during the incident, endangered fire units (personal communication, January 17, 2011). Fifteen years after Freddy's, many of the inter-agency operational and communication deficiencies revealed during the incident have yet to be resolved, despite the fact that the FDNY and NYPD have been responding to what is now called Mumbai-style attacks (in this case one assailant) for many years.

B. CASE-STUDY FINDINGS AND COMMONALITIES

- All four incidents prove that firefighters and emergency personnel may operate in a chaotic, active-shooter environment to address life-safety, regardless of a lack of standard operating procedures or protocols.
- Two of the four incidents occurred at schools, and three of the four attacks targeted soft targets in densely-populated urban areas.
- Interagency training, along with the proper equipment, can enhance emergency responders.
- Interagency communications protocols must be pre-established to ensure that all responding personnel receive critical information expeditiously.
- Fire, incendiary devices and explosives can greatly complicate, slow down and confuse operations.
- Emergency-responder inaction will endanger hostages at terrorist incidents

C. SWARMING, NETWAR, AND HYBRID WARFARE

The tactics described in the case studies are consistent with a wider tactical shift in combat from non-state actors. Swarming, an attack method where a small strike force forms quickly to surprise and overwhelm an adversary or target, is found in a wide array of natural, military, political, and social contexts. Because terrorist swarming tactics are a relatively new threat, borrowed from successful insurgency tactics in the twentieth century, government reports or academic literature on the role of firefighters at active-shooter terrorist attacks is limited. The same military academics that introduced the term "swarming" in the 1990s have expanded on the idea with "netwar," a mode of warfare characterized by a networked, multi-tiered approach to conflict. Other theorists describe this emerging method of attack as "hybrid warfare." Whether presented as swarming,

netwar, or hybrid war, it is important that first responders study paramilitary-style terrorism. First responders will likely come across this threat more often in the near future.

1. Swarming

The emerging military doctrine of swarming is categorized by quick, coordinated strikes from small units (Arquilla & Rondfeldt, 2000, p. vii). Swarming is considered the fourth military doctrine, after chaotic melee (linear formations that quickly dissolve), brute-force massing (geometric formations that attack in waves) and nimble maneuvers (complex, synchronized "nonlinear" movements) (Arquilla & Rondfeldt, 2000, pp. 10–23). Swarming has two fundamental requirements: one, to be able to strike at an adversary from multiple directions; and, two, separate striking forces forming a "sensory organization," providing the surveillance and "synoptic-level observations" necessary in the creation and maintenance of "topsight" (Arquilla & Rondfeldt, 2000, p. 22). In other words, swarming units do more than engage a target independently; they rely on each other, and sometimes their superiors, for situational awareness through instant, wireless communications.

Swarming is carried out in four stages (Edwards, 2000, p. xvi):

1. Locate
2. Converge
3. Attack
4. Dispense

During the Mumbai terrorist attacks in November 2008, for example, many sources state that the terrorists' actions were well rehearsed and that modern communications and public information sources enabled their operations. Swarming allows "[a] myriad [of] small units that are normally kept dispersed turn to converge on a target from all directions, conduct and attack and then redisperse to prepare for the next operation" (Arquilla & Rondfeldt, 2001, p. 333). Loosely-networked terrorist groups and improvements in communication technologies have enabled swarming tactics: "swarming

requires complex organizational innovations and more information structuring and processing capabilities than do earlier paradigm" (Arquilla & Rondfeldt, 2001, p. 21).

a. Swarming in Nature

> *Go to the ant, thou sluggard; consider her ways and be wise*. (New American Standard Bible, 2010, Proverbs 6.6)

As the term swarming implies, paramilitary swarm tactics are similar to those found in nature by social animals and insects. For example, ants behave and attack in a coordinated way despite the absence of hierarchal leadership. Instead, each ant adjusts its behavior, including the urge to attack, based on chemical cues from pheromones released by their neighbors, acting locally with global consequences, a hallmark of complexity science. When converging on a threat, ant formations quickly disintegrate into mass swarms that seemingly blanket an opponent from all directions.

How ants communicate, and then act, is relevant to the study of paramilitary terrorist attacks, even when the ants are engaged is food searches and not warfare. Experiments on a species of ants in Argentina prove that the ants were able to quickly figure out the quickest route to a food source. Ants that returned to the colony first, the research showed, compared to the ants that took a more circuitous route, had more influence on the paths of succeeding foragers, who, on average, followed the quicker path (Fisher, 2009, p. 37). Similarly, terrorists operating during active-shooter attacks will similarly communicate with each other, and possibly a central leader, through verbal or non-verbal cues, or even wireless devices, as they adjust to challenges from law enforcement or shift to targets of greater opportunity.

The examination of ant swarming must include defense measures. Aside from avoidance or evacuation, animals of any size or ferocity have no way to defend against the relentless onslaught of an ant swarming attack, with one notable exception—another ant swarm. Ants wage "territorial wars against other ants," according to a RAND booklet, *Swarming & The Future of Conflict* (Arquilla & Ronfeldt, 2000). "These wars are frequently protracted, and of an operational complexity that mirrors human wars in striking ways" (Arquilla & Ronfeldt, 2000, p. 26).

> Typically, these insects employ "blanketing" tactics when foraging outside the hive or nest, striking at their adversaries or prey from all directions. The goal is to overwhelm any cohesive defenses that might be mustered. Although these insects are often more in linear formations, they are quite adept at shifting into a swarming mode at the point of engagement. In the case of ants, this behavior has been called "swarm raiding" (see Holldobler and Wilson, 1994). (Arquilla & Ronfeldt, 2000, p. 25)

Bees also attack as a swarm, and unlike ants that react to mostly chemical cues; bee scouts, acting as ad hoc leaders, will inform other bees of the quickest path to their target through their behavior, namely, by flying quickly in a straight line, inspiring others to follow suit (Fisher, pp. 29–30). Figure eights, round movements, and tail-wagging are "dances" that bees use to communicate food sources, distances, and other information (Polarization, 2011). Another interesting difference between the two species is that repeated attacks from individual bees are not possible as they die soon after discharging their stingers, analogous to coordinated suicide bombers. As discussed, convergence tactics are not limited to insect world.

b. Swarming in Human Conflict

Swarming has been used in human warfare for thousands of years by various players. In 329 B.C., Alexander the Great's Macedonian forces faced swarming attacks from the nomadic Scythians, who used horse archers to quickly assemble and strike Roman phalanxes in the northeastern border of the Persian Empire, according to military academic Sean Edwards (2000, p. 14). Horse archers were also used by the Parthians to defeat the Roman army in the Battle of Carrhae (53 B.C.), where the mobility of Parthian horses and the range of the bows gave Parthians a tactical advantage (Edwards, p. 20), even against Roman cavalry. Edwards calls the thirteenth century Mongols under Genghis Khan the "ultimate swarmers," based on their conquests that spanned from Korea to Germany, considered "the largest continuous land empire ever" (p. 28). Factors that contributed to Khan's success can be applied directly to what enables groups that use swarm tactics today, including decentralized command, superior situational awareness, mobility and long-range weaponry (Edwards, p. 28). Also, the Mongols needed open terrain to maneuver a large number of mounted soldiers (Edwards,

p. 30); similarly, paramilitary terrorists would be enabled by urban sprawl. In more recent times, less powerful actors have used swarming methods against more established nation-states. For example, in the Anglo-Boer War (1899–1902), South Africans used a cultural emphasis on horsemanship and the range of Mauser rifles to strike British forces quickly and from distance (Edwards, p. 39).

A naval example of swarming is just as relevant, especially in this case, due the fact that the swarming methods were eventually defeated. During World War II, German U-boat submarine groups, called "wolf packs," took inspiration from their lupine namesake by coordinating highly-successful attacks, at least in the beginning of the war, on Allied shipping in what became known as the Battle of the Atlantic. After scout U-boats made contact with a shipping fleet, wolf packs converged in loose formations of five or more, as they targeted quarry, and shifted to swarm-like strikes as they converged from multiple locations, according to Edwards (2000, p. 43), enabled by mobility and theater-wide communications, namely radio. U-boats attacked from the surface, usually at night, as Allied sonar could detect the vessels under water but not on the surface. Later in the war, Allied use of radar and depth charges, combined with the extended range of air cover that closed the security gap in the middle of the Atlantic Ocean, shifted the advantage away from the wolf packs (Edwards, 2000, p. 47). It was a combination of technological advancement, advanced operations and communications, and collaboration between air and sea resources that defeated the U-boat swarm—an important lesson for today's emergency responders.

c. Terrorist Swarming

As the natural and historical examples show, swarming is not necessarily a new doctrine, but terrorist application of this military method is considered an innovation. Shortly after the 2008 Mumbai attacks, the New York Police Department's (NYPD) intelligence division released a comparative study of the Mumbai and Lahore cricket team attacks, stating that there is evidence of a "'shift in tactics' from suicide bombers to a commando-style military assault with small teams of highly trained, heavily armed operatives launching simultaneous, sustained attacks" (Times of India, 2009). This

interpretation suggests that terrorists are moving from large-scale, weapons of mass destruction (WMD) hazmat attacks, to more flexible strikes with conventional weapons combined with unconventional tactics. Swarming affords terrorists with the freedom of tactical autonomy that can be enhanced by communications with a hierarchal command structure, affording them periodic updates or instructions from superiors. "Swarming is going to be more a function of cultivating an appropriate turn of mind and a supple, networked military form of organization than it will be a search for new technologies," said Arquilla & Rondfeldt (2000, p. 5). The swarming concept is best described by Mao Tse Tung's strategic dictum on guerilla warfare, which encourages "strategic centralization, tactical decentralization" (Arquilla & Rondfeldt, 2000, p. 21).

2. Netwar and Hybrid Warfare

The same military academics that introduced swarming have built on the idea with a more comprehensive look at network-based conflict in the information age, which they have dubbed "netwar." Netwar, or networked-based conflict and crime, "will become major phenomena in the decades ahead…[including] transnational terrorist groups" (Arquilla & Rondfeldt, 2001, p. 6). At first glance, it would appear that the name refers to internet-based conflict or cyberwar, but netwar in its widest context acknowledges five categories that networked-based, non-hierarchical organizations require to be viable: technological, social, narrative, organizational, and doctrinal cohesion. As an attack method, netwar is similar to swarming, characterized by seemingly leaderless groups moving quickly on targets.

Within the scope of terrorist attack methods, netwar provides a useful lens for first responders, who must understand and adapt to this emerging threat. Arquilla and Ronfeldt acknowledge the effectiveness of this attack method: "In part, the success of netwar may be explained by its very novelty—much as earlier periods of innovation in military affairs have seen new practices triumphant until an appropriate response is discovered" (Arquilla & Rondfeldt, 2001, p. ix) With a study of recent terrorist swarming attacks worldwide, American emergency responders have an opportunity to

find that “appropriate response” to complex active-shooter terrorism before attacks occur on American soil, but the solution may require leaders to drastically alter their perception of organizationally-isolated response models.

What will likely come out of an examination of terrorist swarming strategies is the realization that the best way to match a network is with a network. “Networked threats require a response from either a network or a hybrid (that is, a blend of a hierarchy and a network).” (Arquilla & Rondfeldt, 2001, p. 124). A fire-police network, decentralized at the incident command level, along with a robust communication link with superiors, will empower first responders during a network-based, active-shooter attack, which will improve survival odds for hostages or endangered persons.

Lastly, Frank Hoffman, a military theorist, proposes that future conflict will be characterized by a “convergence” of regular and irregular warfare, combatants and noncombatants, physical and psychological dimensions, and kinetic versus non-kinetic forces described as “hybrid warfare” (F. Hoffman, 2009, p. 34). In hybrid wars, conventional and unconventional attack methods will blur into well-coordinated strikes, creating an effect well beyond the sum of the components, which greatly increases both lethality and impact. Hybrid warfare will be used by not just nations, according to military experts, but also non-state actors such as terrorist organizations. “Hybrid threats incorporate a full range of modes of warfare, including conventional capabilities, irregular tactics and formations, terrorist acts that include indiscriminate violence and coercion, and criminal disorder,” Frank Hoffman said (2009, p. 36).

Though this new theory is military in nature, many of the issues closely parallel the issues that first responder agencies will face in preparation for, and response to, multi-location, multi-dimensional paramilitary terrorist assaults. In these attacks, terrorists will pack much more than small arms in their arsenals, requiring an emergency response that also blurs traditional lines. Frank Hoffman offered the following quote from John Arquilla in a 2009 *Joint Force Quarterly* article: “While history provides some useful examples to stimulate strategic thought about such problems, coping with networks that can fight in so many different ways—sparking myriad, hybrid forms of conflict—is going to require some innovative thinking” (Hoffman, p. 38).

The following quote captures netwar as something more than technological progress, but an emerging form of organization and doctrine:

> 'It takes a network to fight networks.' Governments wishing to counter netwar terrorism will need to adopt organizational designs and strategies like those of their adversaries. This does not mean mirroring the opponent, but rather learning to draw on the same design principles of network forms. These principles depend to some extent upon technological innovation, but mainly on a willingness to innovate organizationally and doctrinally and by building new mechanisms for interagency and multijurisdictional cooperation. (Arquilla & Rondfeldt, 2001, p. 54)

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IV. MUMBAI-STYLE TERRORISM, AN EMERGING THREAT

Scholars, journalists and terrorism experts claim that terrorists are shifting from large-scale, CBRN attacks towards Mumbai-style strikes, corroborated by recent terror warnings for Europe and the U.S. Lead terrorism and counterinsurgency expert Bruce Hoffman, a professor at Georgetown University, co-wrote a report titled *Assessing the Terrorist Threat in September 2010* (Bergen & B. Hoffman). In the paper, the success, as measured in media coverage, of the Mumbai terror attacks was acknowledged. "The long, drawn-out assault in Mumbai produced round the clock coverage around the globe, something other terrorist groups want to emulate," according a 2008 report from the Bipartisan Policy Center (p. 28). Just two weeks later, Richard Norton-Taylor and Owen Bowcott reported in The Guardian that European authorities announced that a Mumbai-style commando raid on European targets was foiled by drone attacks on terrorist camps in Pakistan; U.S. targets were also threatened (Norton-Taylor & Bowcott, 2010; National Terror Alert Response Center, 2010). Two months later, John Arquilla (2010) wrote an editorial for a San Francisco paper anticipating that "in all likelihood, the terrorists will continue preparing to mount small-scale swarming assaults along the lines of the Mumbai model." And days before Christmas, India issued a terrorism alert for Mumbai warning that another paramilitary terror assault was planned by Lashkar-e-Taiba, who carried out the 2008 attacks, and that the operatives may already be in place (Guha, 2010).

The United States has seen a rash of active-shooter incidents in the past few years (Virginia Tech, Binghampton immigration office, Fort Hood, etc.), both criminally and terrorist motivated, causing many first responders and military organizations to release tactical and work-place guidance on how to handle these incidents. In response, the United States Army has released a guide to its personnel on how to react to an active-shooter incident. In the guide, an active-shooter is defined as "an armed person who has used deadly physical force on other persons and continues to do so while having unrestricted access to additional victims" (United States Army, 2009).

A key component of active-shooter terrorism is the desire for the attackers to maximize causality counts on these "victims," but a high body count is a means to an end, and not the primary objective. "Terrorism may be seen as a violent act that is conceived specifically to attract attention, and then, through the publicity it generates, to communicate a message," said terrorism expert Bruce Hoffman (2006, p. 174). "Terrorism is theater," said Brian Jenkins in a ground-breaking paper, who has been studying terrorism since the 1970s, "terrorist attacks are often carefully choreographed to attract the attention of the electric media and the international press" (Hoffman, 2006, p.174). The police expert interviewed for this paper, who will remain anonymous, said that low-tech, easy-to-do prolonged terror attacks creates a tremendous ripple effect (anonymous personal communication, October 9, 2010). The police source added that terrorism active-shooter events are usually carried out by multiple-shooters, contrary to a wider trend in criminally motivated active-shooter attacks that usually involve just one shooter (personal communication, 2010a).

A. MUMBAI-STYLE ATTACK DEFINED

The intelligence wing of the FDNY Center for Terrorism and Disaster Preparedness has defined the Mumbai-style terrorist attack, in draft form, as the following (Esposito, Newman, Ward, & Carroll, 2011):

> A swift-moving, coordinated terrorist attack using either barricade- or siege-like assault methods by several operatives, enabled by wireless communications, converging on a series of targets (proximate or remote) in a high-density, urban area, combining an dynamic array of weapons, such as firearms and explosives, including the deliberate use of fire and smoke, in an attempt to maximize civilian casualties and media exposure, while confusing and overwhelming local responders over a possible multi-day operational period if not neutralized.

B. FIRE AS A WEAPON, LIMITATIONS OF ALL-HAZARDS

Internationally, the Mumbai attacks continue a trend in modern terrorism to use fire as a weapon, from the Irish Republican Army, who used fire and homemade explosives for almost three decades (Oppenheimer & English, 2009) to the 9/11 World

Trade Center attacks, possibly the biggest improvised incendiary device (IID) ever used. During the Mumbai attacks, "[LeT] terrorists used fire as both a weapon and a diversionary tactic in their deadly siege of the Taj Mahal and Oberoi-Trident hotels," said Scott Sweetow, an assistant special agent for the Bureau of Alcohol, Tobacco, and Firearms and Explosives (2009, p. 33). Though not a component of CBRNE, first responders should not underestimate the destructiveness or impact of incendiary attacks: an equal amount of gasoline, by weight, releases 15 times the energy as TNT, according to physicist Richard A. Muller in his book, *Physics for Future Presidents: the Science Behind the Headlines* (2008, p. 20).

Fires at terrorist attacks are much different than routine fires. FDNY Deputy Assistant Chief Stephen Raynis, who wrote his master's thesis for the Naval Postgraduate School on IIDs as terrorist weapons, said that terrorists may use any of a number of accelerants or metals to start a fire, and that casualties and extensive damage to critical infrastructure need not be caused by CBRNE weapons (2006, p. 39). The lesson here is that terrorist attacks are not just CBRNE-related. Fire may be the primary or secondary weapon, and despite the "all-hazards" movement, a terrorism response to an active incident that involves firearms, fire, incendiaries and explosives is much different that a routine fire or hazmat emergency. All-hazards doctrine makes two assumptions that are contrary to active-shooter terrorist incidents: one, firearms do not fit into any of the CBRNE categories; and two, the approach does not consider a human, adaptive enemy who will manipulate the battlespace for their own advantage at the detriment of first responders.

According to all-hazards doctrine, the dangers found at routine fires or hazmat incidents are considered similar enough to the consequences of a terrorist response that the training should essentially overlap. According to a policy studies professor, Dr. William L. Waugh (2004), at Georgia State University:

> All hazards does not literally mean being prepared for any and all hazards that might manifest themselves in a particular community, state or nation. What it does mean is that there are things that commonly occur in many kinds of disasters, such as the need for emergency warning or mass

> evacuation, that can be addressed in a general plan and that that plan can provide the basis for responding to unexpected events.

Another emergency preparedness expert was quoted in a *Homeland Security Affairs* article, "The argument assumes that while terrorism may be somewhat different from other emergencies, it may not be that much different," (Bellavita, 2006, p. 4). Waugh (2004) claims that all-hazards planning provides a "basic framework" for a wide variety of incidents and addresses the most likely events to occur. It is hard to argue that much of first responder procedural, communications, and training strategies mesh with an array of incident types, but that can be said of the most basic instruction that firefighters and police receive during the first year at their respective academies, without the need to name it an unique doctrine. According to Dr. Waugh, challenges to the universality of all-hazards doctrine are based on "a fundamental misunderstanding of the model." (2004); but current terrorist trends dictate otherwise.

Unfortunately, terrorist attack methods are not static. Less than two months after the release of Waugh's paper, "Terrorism and the All-Hazards Model," terrorists at the Belsan School massacre rewrote the book on terrorist attacks. From 2004 onward, first responders worldwide would have to change their perceptions of what a terrorist response was, and now include an ongoing, active-shooter environment in their own cognitive and procedural models. For example, William Bird, a branch chief for the DHS Intelligence and Analysis's Homeland Counterterrorism Division, presented a seminar on Mumbai-type attacks at the FDNY training academy in September 2010. The PowerPoint presentation, on which the lecture was based, stated, "Fire and fire related injuries killed nearly as many victims as gunfire" (DHS, 2010, slide 33). Mr. Bird concluded the segment on fire as a weapon by asking the following question: "How would FDNY operate if a building was on fire, but there were attackers and victims still inside?" (DHS, slide 33). This document is an attempt to begin answering that very question.

Terrorism response can be very different from routine responses when firearms, secondary devices, aviation fuel, booby traps, and intentional collapse hazards are considered. All-hazards' doctrine, whose origins are somewhat enigmatic, was included in federal documents at least by the late 1980s. For example, the National Security

Decision Directive 259 (NSDD 259) was issued in February 1987 during the Reagan administration, and it stated: "The civil defense program will continue to support all-hazard integrated emergency management at state and local levels, to the extent that this is consistent with and contributes to preparedness of the Nation in the event of an attack, whether nuclear or non-nuclear means" (National Security Council, 1987). In the context of the waning Cold War, all-hazards can be interpreted as threats to the United States by nuclear or other means; also, the document places the primary responsibility in the response to an attack to local governments. In 2007, a Cook County, Illinois emergency preparedness "disaster dictionary" defined all-hazards as "a conceptual and management approach that uses the same set of management arrangements to deal with all types of hazards (natural, man-made, complex)" (Suburban Emergency Management Project, 2007). With shifting terrorist tactics, generalized training is no longer appropriate for all terrorist incident types.

C. ABSENCE OF FIRE IN CURRENT TRAINING AND PREPAREDNESS

What is conspicuously absent from law enforcement preparations for a Mumbai-type terrorist event is consideration of fire as part of the weapons mix. *The Wall Street Journal* ran an article in late December 2010 on NYPD's exercise simulation to gauge its preparedness for a so-called Mumbai-style attack in Manhattan (Gardiner, 2010). During the scenario, terrorists simultaneously struck several diverse sites (both functionally and geographically), including the Federal Bureau of Investigation's New York headquarters, a federal courthouse, Macy's and Bellevue Hospital. According to the article, police counterterrorism officials are "comfortable that they were prepared for any type of terrorist attack," despite the fact that fire, smoke, low visibility, water sources, and building collapses were not considered in the scenario, based on the article (Gardiner, 2010). Also, the FDNY was not invited to the simulation, even though fire will likely be used by terrorists in a real event. In fact, the word "fire" was not mentioned once in the article (except in the phrase "opened fire"), suggesting that fire as a tactic was not strongly considered during the simulations.

The Counterterrorism Bureau of the NYPD recently released an undated report titled, "Active-Shooter: Recommendations and Analysis for Risk Mitigation" (NYPD, n.d.). The report lists over 200 active-shooter incidents (mostly criminal in nature) nationwide from 1966–2010. In the short analysis section, charts show certain data, including age of attackers, relationship to victims, casualty counts, how incidents were resolved and building type (NYPD, pp. 4–7). In the weapons' section, the report states that 36 percent of active-shooter incidents involved more than one weapon (NYPD, p. 7). What is absent in the report is information on how many of these incidents involved fire or explosives as a weapon, or how many casualties can be attributed to fire and smoke, if present. Another category that may have been useful is the motive for the attack, which would strongly influence tactical considerations, including hostage negotiations and speed of engagement.

Even the national fire service seems slow to connect Mumbai-style terrorism with the lethality of fire during these attacks. An August 2010 article in *Fire Chief* magazine chronicles how firefighters in Clayton County, Georgia are now training with law enforcement to integrate "tactical medics" with police SWAT (special weapons and tactics) teams to provide injured police officers with immediate first aid and trauma care during insertions in hostile environments (Roberts, 2010, pp. 59–70). The idea, which closely follows corpsman/medic models in the military, is to provide injured officers with near instantaneous medical care is laudable, but the program does not consider fire suppression with close medical support—a combination of skill sets that may be required during a Mumbai-style attack. The tactical medic concept is not new, but Clayton County's dedication to integrated units is evident as participants require additional equipment and training, including firearms for the medics, despite being "cost-prohibitive" (Roberts, 2010, p. 64) and best suited for high-density urban environments.

D. HOSTAGES

Another important consideration is the difference between a hostage situation during Mumbai-style terrorist attacks and an active-shooter incident involving hostages, instigated by a profit, anger, mental-illness, or desperation. In terrorist active-shooter

incidents, attackers will only take hostages to leverage negotiations or as a stalling tactic; they have no intention of releasing the hostages because the hostages ensure intense media coverage.

John Giduck, a security expert who wrote the only comprehensive English-language book on the Beslan School massacre in 2004 titled *Terror at Beslan*, has preserved several statements from Russian military leaders on the massacres. According to Giduck, the experts believed that "terrorists decreasingly take hostages in the conventional sense; they 'take people and then kill them.'" Russian terrorist experts recommend that assault teams move quickly against a paramilitary terrorist attack: "The hostages' only real opportunity for survival is during the confusion of the initial assault" (Giduck, p. 338). A Department of Homeland Security Tripwire intelligence report from September 2010 said that during small-unit tactics, such as Mumbai, "terrorists fought to the death and were not open to negotiations, nor did they present a list of demands" (DHS, 2010).

Ron Borsch, an emergency preparedness expert and consultant, has come up with a formula to track the number of "murder attempts by minute" at active-shooter incidents called the "stopwatch of death" (PoliceOne.com News, 2007). In his research, he studied data from Columbine, Virginia Tech, and the San Ysidro McDonald's attack, among others. The common finding is that the longer the duration of an active-shooter event, the higher the casualty count (PoliceOne.com News, 2007), regardless if it is classified as a terrorist- or criminally-motivated attack.

The anonymous police expert for this paper said American law enforcement will lose valuable minutes in avoiding bloodshed if they think that these incidents can be resolved through negotiations. Hostage-taking events by criminals or emotionally-disturbed persons have an endgame other than the death or injury of the hostages, and the same cannot be said for a terrorist hostage crisis, he said (anonymous personal communication, October 9, 2010). He added that if terrorists were serious about negotiations and a peaceful resolution, they would not be using pressure-sensitive triggers on explosive devices, referring to the Beslan massacre. "These weren't criminals. They were terrorists who are at war with Russia and who took over 1,000 children, women and

men hostages," according to a *Los Angeles Times* article on Beslan, "it was a military operation, and in a military operation, there are going to be collateral casualties to hostages and civilians" (Murphy, 2009). As difficult as it is to accept, the FDNY must expect that negotiations are not the primary goal of these hostage incidents, and that they will likely end with mass casualties.

E. RELIANCE ON COMMUNICATIONS (RESPONDER AND TERRORIST)

> (Concentric dispersion) the idea feature[ing] small, dispersed units held together with robust communications networks that only come together ("pulse," to use our term) at the point and time of attack. (Arquilla & Rondfelt, 2000, p. 42)

Today's swarm-like attacks are possible partly due to modern wireless telecommunications. "The Mumbai attackers were able to locate precise landing points by using a Global Positioning System (GPS) for navigation," said Charles Allen, former under secretary for intelligence and analysis for DHS, as part of congressional testimony (Sweetow, 2009). The attackers used cell phones, satellite phones, and Blackberries to communicate with themselves and their leadership during the three-day, multi-site rampage (Rabasa, Blackwill, Chalk, Cragin, Fair, Jackson et al., 2009, p. 7). "As communications technologies improve, siege-style terrorist attacks will increase globally," according to Arquilla, "commercial-off-the-shelf (COTS) technology is available that can support a swarm's need for the dense communication of time-urgent functional information" (Arquilla, 2000, p. 67). What makes the preceding quote extraordinary is that it was written nine years ago.

F. NOVELTY AND AN ADAPTIVE ENEMY

> The bright-side actors may be so deeply embedded in and constrained by a society's established forms of organization that many have difficulty becoming early innovators and adopters of a new form. In contrast, nimble bad guys may have a freer, easier time acting as the cutting edge—and reacting to them maybe be what eventually spurs the good guys to innovate. (Arquilla & Rondfelt, 2000, p. 313)

Both terrorists and emergency responders learn and adapt, and based on fewer organizational constraints, terrorists usually adapt and innovate faster than government agencies. Terrorists think in the long-term, such as fortifying buildings (similar to Beslan), as they stay three or four steps ahead, which is something that needs to be addressed, with fire, even more so, the police source stated. Also, he said that law enforcement lives by mistake, or by playing catch up, and cited the late transition to faster-loading 9 mm handguns from revolvers, as just one example (anonymous personal communication, October 9, 2010); the fire service in no different.

From the models, we see terrorist adaptation—where we would have seen sophisticated IEDs, now we see substitution IIDs (improvised incendiary devices), the use of fire as a weapon, Joe Pfeifer said (personal communication, October 4, 2010). Regarding a paramilitary terrorist attack, as first responders move, the terrorists will move and react, possibly lighting fires beneath law enforcement on lower floors, Pfeifer added. For terrorists, a move to more incendiary devices, versus IEDs, shows an ability to adjust, as seen with the rash of fire-bomb attacks on churches in Malaysia, Pakistan, and Iraq. During the Mumbai attacks, the police source said that the terrorists deliberately dropped bags with IEDs among the hundreds of abandoned bags at the CST train station to slow down the police response because one cannot put a bomb blanket on every bag—"talk about a thinking enemy" (personal communication, October 9, 2010). During the Virginia Tech shooting, Seung-Huei Cho learned from previous attacks by chaining doors shut and placing misleading signs, the police expert said (anonymous personal communication, October 9, 2010).

For the fire service, "we have to start to think innovatively," Joe Pfeifer warned (personal communication, October 4, 2010). "What occurs, as in the Mumbai-type of attack scenario, you are experiencing a novel event, especially since we have not experienced a Mumbai-style attack in New York, which does not match any pattern or past experience," Pfeifer added (personal communication, October 4, 2010). In regard to addressing commonalities, a Mumbai-type attack would be a novel event, suggesting a need to form taskforces, and think through possible scenarios that would not cover every eventuality, but would be the difference between customizing tactics versus having to

create something ad hoc at the scene (personal communication, October 4, 2010). Joe Pfeifer concluded by challenging emergency responders to be innovative at the desktop, as well as on the fire ground or during a firefight (personal communication, October 4, 2010).

G. IMPORTANCE OF NETWORKS FROM COMMAND LEVEL TO OPERATING UNIT

> A concept related to swarming, namely "network-centric warfare," rests on an important doctrinal notion: Victory in future battles will depend on more on who has the best "networks" than on who has the strongest "platforms." (Arquilla & Rondfelt, 2000, p. 60)

Joe Pfeifer stressed the need for a networked command. Regardless of what level of chief is in charge, he said that what matters is having citywide situational awareness:

> I've talked about network command, or the ability to connect the operations centers. So we have two things happening: the hastily-formed network at the scene, where responders need to figure out what to do, and talk about it, within the incident command structure. And then we have the ability for networks, or EOCs [emergency operations centers], to connect and to give a large picture of what's happening at the local scene. Without that, you are lost and will have no idea if its one terrorist, or ten terrorists, or whatever the case may be. (Personal communication, October 4, 2010)

According the police source, NYC can handle multiple attacks simultaneously to a certain point, but once the incidents become spread out, it will essentially shut down the city, especially Manhattan (anonymous personal communication, October 9, 2010). Also, he said that the NYPD uses a command system similar to FDNY's borough command.

IV. INTRODUCING THE CONCEPT OF INTEGRATED FIRE/POLICE UNITS

A. JOINT-UNIT PROPOSAL: SWARM UNITS

This chapter will culminate with a look at the issues related to the integrated fire/police unit concept, designed to address paramilitary terrorist attacks and the expected weapons' mix that will used. Integrated fire/police response teams will be called **"SWARM units." SWARM** is an acronym for a Syndicated, Water-enabled, Anti-siege, Response Matrix, meant to describe a networked emergency response designed to combine the unique expertise of firefighters and police officers with the purpose of rescuing hostages or threatened person's by challenging terrorists in an environment that may include firearms, smoke, and fire, or explosives.

With a lack of literature regarding the concept of joint fire/police units (with the exception of tactical-medic research), the issues related to the proposed interagency team were uncovered during the interviews for this paper. All three interviews agreed with the idea of a SWARM unit, with certain caveats. The police source asked rhetorically how the units would be formed, meaning would they stand alone as full-time integrated units, or would they assemble at the incident (assuming previous interaction, identical training, etc.) (anonymous personal communication, October 9, 2010)? The day-to-day structure of SWARM units is a valid concern, best left to the dual-agency experts in that subset. Even with the appropriate training, the police source anticipates that the integrated team could not be formed and ready to enter a hostile environment fast enough for most active-shooter incidents. He based his opinion on case studies, and that same claim is made for specialized, single-agency responses, such as (NYPD) Emergency Services Units. The biggest issue is time, or lack of, the police source said (anonymous personal communication, October 9, 2010).

B. BREAKING POINTS: CAPACITY, CAPABILITY AND DELIVERY

Both Joe Pfeifer and the police expert mentioned the limitations, or breaking points, of the fire service and police response, respectively. Specifically, organizational breaking points refer to the threshold where capacity (how much), capability (how well) or delivery (how quickly) is reached, which will be even less robust in a single-agency response. "The danger is that you think you can handle it all by yourself, and one of those breaking points actually breaks," Joe Pfeifer said. He added that law enforcement and the fire service need to look at breaking points collectively on three levels (capacity, capability, delivery), instead of the first two, where the homeland security community seems to concentrate the most (personal communication, October 4, 2010).

As an example of the delivery issue, Joe Pfeifer explained how revealing a table-top exercise on a Mumbai-style attack was to the City of Los Angles. On paper, the L.A. police department has an effective recall procedure when capacity needs to be enhanced, but what was learned in the exercise is that the arrival time (delivery) of recalled off-duty members, who make up about 75 percent of the workforce at any given time, it will be slower than ideal (personal communication, October 4, 2010).

C. TRAINING

Training promotes pre-incident innovation, according to Joe Pfeifer, and preparations for a Mumbai-type attack are no different. Emergency responders must be armed with the knowledge, protective gear, and skills sets needed for working with other agencies. He added: "If you train with a SWAT team, if you dress like a SWAT team, if you understand how they move, how to protect yourself, and how to use barriers as protection, you can minimize your exposure time" (anonymous personal communication, October 9, 2010).

The police source mentioned qualifications issues, but he said it is better to work out those details than to be unprepared for an event. Additional training will be necessary for SWAT units to function properly in tight quarters, for instance. It would be difficult to move a fully-armed, interagency tactical team down the average hotel hallway, which

would only be made more chaotic and slow with fire, smoke, noise and low light, he said (anonymous personal communication, October 9, 2010). As far he knew, law enforcement does not train for those conditions (anonymous personal communication, October 9, 2010). In consideration of low-light tactical environments, possibly caused by terrorists cutting power, the police source saw value in SWARM units, even in the absence of fire and smoke.

D. LIMITS OF TRAINING

The importance of training is a general theme throughout this inquiry, stressed by the interviews and in the literature, but there are limits to training. Firefighting is a uniquely chaotic occupation, where countless variables enter into a firefighter's decision-making, from the unit-level to the highest command.

During a Shield conference at NYPD headquarters in lower Manhattan in January, 2011, attended by hundreds of fire safety and security personnel for corporate buildings, along with a predominately law-enforcement audience, Robert Lukach, a NYPD Deputy Inspector, spoke on Special Operations Division's preparedness for active-shooter attacks. Lukach said that ESU police officers are trained to Firefighter 1 national standards (Lukach, 2011), which presumably gives them the expertise that they need to operate in a fire or smoke environment while engaging terrorists during a Mumbai-style attack. According to a course outline on Firefighter 1 training, it takes 78 hours to certify (NYS Office of Fire Prevention, 2004), compared to six-months of training that the average FDNY probationary firefighter receives in the academy; the firefighter is still not considered proficient in the profession for several years after his classroom instruction. As per current New York Codes, Rules and Regulations (NYCRR), Firefighting 1 and II training is meant to provide "minimum standards for firefighting personnel" (2011), and not professional expertise, which is a multi-year combination of training and experience in the urban fire service.

Another key difference between firefighting and law enforcement is the frequency of responses to active, life-threatening incidents. The majority of firefighters learn their craft in actual fires under close supervision of officers and senior members over a long

period of time, whereas police officers discharge their weapons infrequently. A NYPD report on police shootings showed that in 2010, NYPD police officers were involved in 34 "adversarial conflict police shootings" (NYPD, 2011a), involving a workforce of 34,500 (NYPD, 2011b). In 2010, the FDNY responded to the following structural fires: 26,748 total; 2,464 "all-hands," typically involving about 50 firefighters; and 242 multi-alarms (FDNY, 2011a), with a uniformed workforce of 10,725 firefighters and officers (FDNY, 2011b).

Training alone cannot provide someone with the necessary expertise to safely function at an advanced fire. A study on the limitations of training for Iraqi forces was released in *Parameters*, a publication from the U.S. Army War College. "Training [sic] cannot solve all human performance problems," the article said, "some disciplines view training as a last resort, to be employed only when no other means of improving performance will work" (Felicetti, 2007).

E. WEAPONS FOR FIREFIGHTERS

Due to the chaos that would surround a Mumbai-style terror attack, especially if incendiary fires reach an advanced stage, firefighters may have to carry firearms in case they are split from their police escorts, or if their security is incapacitated. When asked his thoughts on the idea of arming firefighters who will operate in a low-sensory environment alongside police officers, the police source said that he "did not have a problem with it," but would have to be done within the strictest procedurals controls and training protocols (anonymous personal communication, October 9, 2010).

The concept of armed firefighters has a precedent. Some firefighters working as tactical medics in Clayton County (Georgia) are certified to carry 40 caliber Glock semi-automatic pistols, which includes sharpshooter tests and regular training with police with SWAT teams (Roberts, 2010, p. 64). Firefighters also carry body armor, wear law enforcement uniforms and wear Kevlar helmets. The pistols are secured in a locked gun vault and are opened only when a special operations' call comes in (Roberts, 2010, p. 64). The decision to arm these firefighters is meant as a backup in case SWAT members are unable to protect them, and not as an offensive measure.

F. THE NEED TO ALIGN AGENCIES' MISSIONS

At most incidents, firefighters and police have separate, sometimes competing, goals. If an incident only requires a law enforcement presence, or if it is strictly a fire, there will be little operational or mission overlap, but if an event blurs the line between the two agencies regarding life-safety or incident mitigation, tensions could arise. No group members would willingly relinquish a task that they feel is within their primary mission, but more clarity and better communications can lessen any friction.

In general, there needs to be more communication among response agencies to harness the expertise of all players. During exercises, the police source said, "There is always an assumption of what other agencies will do without them being in the room, which I find amazing, because I don't know what made us [PD] all of a sudden experts on what another agency will do." It would be better if someone from the other agency makes decisions within their area of expertise, but law enforcement sometimes operates in a vacuum, he said.

Concerning the idea of the joint unit, all three interviewees (who were coded), as well as Mike McPartland, expressed concern over the joint unit command structure, and what exactly the roles of firefighters and police would be. McPartland concluded the interview by asking a difficult question: "When you need PD protection to operate a hoseline, who is in charge?" (personal communication, January 17, 2011).

G. POLITICAL CONSIDERATIONS, THE COST OF INACTION

The SWARM-unit concept must gain support from political leaders at all levels of government if it has chance to succeed. One possible way to promote the SWARM unit in political circles is to ask what would be public reaction if the units are not formed, and many people are killed or injured. In an unrelated example, the substandard response by the NYC Sanitation Department during a surprisingly intense snow storm that hit the day after Christmas last year, led to intense criticism of the sanitation department and the mayor's Office of Emergency Management (OEM). The response from the mayor's office was swift. For the next snow storm a week later, plows and salt spreaders were a

ubiquitous site, though snow totals were much less; a fact that was not lost on New Yorkers or the media (Saul, 2011). The lesson here that it is better to make changes before a knowable incident occurs. "If you go back the last two years, we can't say anymore that we never thought of ten guys with guns going around the city killing everybody," the police source said, "if you do, you are going to sound ridiculous" (anonymous personal communication, October 9, 2010).

The SWARM unit may be financially viable in consideration of legal liability that would be part of the Mumbai-style attack's aftermath. As mentioned above, many lawsuits associated with the police response to the Columbine massacre cite the slow emergency response into the building. It would be naïve to say that the right preparations can prevent a Mumbai-attack from becoming a mass-casualty incident, but it may minimize the carnage. "If we fail to act in the face of this swarm warning, the only uncertainties remaining will be about whether the damage done by such attacks is grave or catastrophic," Arquilla offered in an editorial, "let's do something before it comes to this" (2010).

H. AN ALTERNATIVE TO THE SWARM UNIT: TRAIN ALL MEMBERS

No honest academic inquiry would be complete without a look at the alternative view. The anonymous police source said, "I like the integration idea, but I would hesitate to say that I would be behind a dedicated team, partly because they would be underused." He went on to say that it would be difficult to justify the costs and manpower commitment associated with integrated teams to department leaders, respectively. To prove his point, he mentioned the NYPD critical response vehicle (CRV) program that was active after 9/11, designed to quickly flood an area with police resources, usually around 50 patrols cars. Three years later, CRVs were less common as commanders had a hard time justifying the program's effectiveness (anonymous personal communication, October 9, 2010).

Concerning preparations for a Mumbai-style attack, the police source's first priority would be to give the average patrol officer the awareness and capability that they need to directly challenge terrorists. Instead of the current strategy to "isolate and

contain," and then wait for specialized units, beat cops could act more offensively against terrorists, which would translate as earlier mitigation and control, improving hostages' and civilians' chance of survival. Due to delivery limitations, the police source is less inclined to rely on dispersed, specialized units. "It is almost unfair to put them [ESU] in a situation that they can't respond to in the appropriate amount of time," he said.

The police source calls for better intra-agency integration within police departments: Can those average officers integrate with that two-man [ESU] team to make entry?" He questions specialization as the answer to emerging terror tactics that are fast and dynamic. "Why do we dumb down the average guy and train up the guy that is not going to be there?" he asked (anonymous personal communication, October 9, 2010).

Building on the police source's idea of department-wide training for all members, another possible strategy for the FDNY would be to train field units about the hazards associated with paramilitary terror attacks. Just as the police source envisions the average patrol officer having the skills to work alongside an ESU police officer, with the right training, any combination of firefighters and police personnel could quickly assemble and perform at a Mumbai-style attack, specifically, insertion with a hoseline with security protection (similar to what occurred at Freddy's), with the explicit purpose of saving as many lives as possible. System-wide emergency responder swarming capabilities aligns with recent recommendations by military theorist John Arquilla. "I recommend the notion of building a swarming capacity of our own," Arquilla said, "police, military and other responders should be prepared to seize control from the terrorists at or near the outset of any incident, wherever it might take place" (2010).

It seems counterintuitive, but standardized training for personnel in corporations or government departments can promote flexibility, which can allow leadership to quickly respond to a crisis. Retired U.S. Air Force Colonel Randall J. Larsen stresses that "standardization is the key to flexibility—that, and prior training" (Larsen, 2007, p. 205). Larsen cites air force policy to have all pilots trained to the exact same standards, including procedures, vernacular, and pre-flight checklists, but an example from the private sector made the most impact.

Randall Larsen described how United Parcel Service (UPS) handled a snow and ice storm in 1990 that threatened its national route hub in Louisville, Kentucky (Larsen, 2007, p. 205). Local employees could not make it to work after the mayor essentially shut down the city, but the airport had the necessary winter equipment to remain open, so UPS employees were flown into Louisville airport from across the country to take over UPS operations. With standardized procedures, UPS employees who had never worked in Louisville were able to do what was asked of them, ensuring on-time delivery of critical packages nationwide. UPS's successful response to Louisville's freak winter storm was enabled due to system-wide standards, which all emergency responders can learn from.

V. ORIGINS AND DYNAMICS OF GROUP BIAS

A. INTRODUCTION

As discussed in Chapter IV, one solution to complex, assault-style terrorist attacks would be joint fire-police units, named SWARM units. The success of the unit would depend on many factors, including political considerations, budget, compatibility in communications, operational cohesion, logistical issues and lastly, addressing ingrained group bias. The primary function of this inquiry is to explore the last category, namely, the origins and dynamics of group bias, and how this universal social phenomenon affects group interactions and integration. If the proper approach can attenuate bias among firefighters and police officers who agree to join vanguard units, one hurdle can be overcome as the units reach operational readiness. An inquiry into group bias would not just benefit a joint fire-police unit, but any organization that is exploring an inter-agency approach to a unique, complex issue. According to cognitive psychologists, "One of the most destructive and perplexing problems facing contemporary society is the pervasive tendency of people to respond with hostility and disdain toward those who are different from themselves" (Greenberg Pyszczynski, Solomon, Rosenblatt, Veeder, Kiskland, Lyon, 1990, p. 308). As stated in a 2007 article in *Psychology of Terrorism*, "changes in mind-set are required to accommodate the implications of more complex operating environments" (Paton & Violanti, 2007, p. 235).

To promote cohesiveness of proposed SWARM units, the evolutionary origins and mechanisms of bias will be explored, along with current theories on personal and group identity, including social identity theory (SIT), self- and re-categorization, dual identity (cross-categorization), Common Ingroup Identity Model (CIIM), minimal group paradigm, and leadership. If current identity theories are applied correctly, bias can be reversed or greatly minimized. A clear strategy on addressing group bias is essential to the success of a joint, vanguard unit, or any multi-agency collaboration.

A study titled *The Difficulties of Improvising in a Crisis Situation* asked: "What happens when several groups of actors are involved, and when these groups have

divergent methods and referentials or different professional identities?" (Roux-Dufort & Vidaillet, 2003, p. 88). "Agencies implicitly think of themselves as being the most important, and, as a group, their natural tendency is to resist deferring to another organization," FDNY Assistant Chief Joseph W. Pfeifer said in article presented in *Psychology of Terrorism*, "this is especially true for police and fire departments whose organizational development reinforces a sense of belonging to an important group" (2007, p. 212). Pfeifer added that "during large, complex incidents, agencies must change this perception by viewing themselves as part of a unified command" (2007, p. 212).

Taking the idea one step further, assault-style terrorist attacks will require more than several agencies working separately, though collaboratively, but with more thoughtful integration. Paramilitary-style terrorism will require the first wave of police and firefighters to be part of not just a unified command, but unified units. SWARM units could meet the challenges of multidimensional terrorist attack, or any active-shooter incident, by having the best of both agencies working seamlessly as a cohesive group. In this instance, unification must shift not just at command posts, but at the operational level.

In the same article on organizational bias, Pfeifer cited an earlier article on the World Trader Center response: "(Social identity) creates a positive in-group bias toward those who are part of the same group and negative out-group bias against those who are part of an alternate group (Deaux, 1996; Zimbardo, 2004)" (Pfeifer, 2007, p. 208). Current psychological theories makes the statement irrefutable, but that same dynamic can be used to build cohesion in a joint unit, even though local firefighters and police officers come from organizations that do not have a strong history of collaboration or trust. Group bias will never be eradicated, but it can be transferred. As the research shows, participants that train and work together, sharing a common identity, will form that critical primary bond, but simply working closely together on a regular basis is just one of the triggers to promote cohesion.

For SWARM units to work, the policemen and firemen who volunteer will have to support the joint-unit concept on both an emotional and intellectual level; trust must be built, and barriers must fall. According to a 2002 article in the *Annual Review of*

Psychology, "salient intergroup boundaries are associated with mutual distrust (Brown & Gardham 2001), and this undermines the potential for cooperative independence and mutual liking" (Hewstone, Rubin, & Willis, 2002, p. 591). According to Henri Tajfel's groundbreaking studies, social identity is defined as "that part of the individuals' self-concept which derives from their knowledge of their membership of a social group (or groups) together with the value and emotional significance of that membership" (Tajfel, 1982, p. 25). Group bias is hardly a new phenomenon.

B. ORIGINS OF GROUP BIAS: HUNTER-GATHERER SOCIETIES

Group bias can be seen as an evolutionary necessity in pre-civilized human formations. "Collaboration in social groups is a skill that very probably evolved early in the evolution of our ancestors as primitive social relation," according to Fathali Moghaddam, a psychologist at Georgetown University and the Naval Postgraduate School, "and well before we developed complex forms of collaboration characteristics of contemporary human societies" (2002, p. 40). Moghaddam postulates that group members who had support of other group members had a better chance at survival (p. 102), giving the group an evolutionary advantage: "identity did not just serve individual survival functions, it also affected group survival" (p. 103).

Samuel Bowles, an economist at Santa Fe Institute, joins a list of scientists postulating that a person's instinctive tendency towards group bias is a vestige of humanity's hunter-gatherer past. He asks, "Could war among ancestral humans have had substantial effects on the evolution of altruistic behavior?" (Bowles, 2009, p. 2). Bowles's definition of altruism appears to be narrower than the conventional meaning; he implies that acts of selflessness are limited to what is advantageous to the in-group and not society or mankind as a whole. "This might help explain why altruism often does not extend across group boundaries and how this kind of 'parochial altruism' may have evolved in humans…" according to Bowles (2009, p. 14). This type of "parochial altruism" may have been the figurative Goldilocks of group behavior: not too aggressive,

not too passive. Those groups that were too individualistic were eventually defeated or assimilated by the selective altruists, and the less-warlike, generally-altruistic tribes suffered the same fate.

In Bowles's (2009) paper, he defends the idea that social behaviors of warring groups during this era had an effect on human evolution. According to Bowles, "the underlying mechanism is that (as Darwin put it) groups with 'a greater number of courageous, sympathetic and faithful members,' who were always ready to warn each other of danger, to aid and defend each other…would spread and be victorious over other tribes" (Bowles, 2009, p. 2). In other words, members of a tribe who were cooperative within their group, but hostile to out-groups, had an evolutionary advantage over the course of generations. Over countless generational iteration, the selective altruists dominated human advancement. Evolutionary biologist Richard Dawkins, who wrote the often cited, "The Selfish Gene" in the 1970s, defended the idea of individual, or "gene" selection, but acknowledged a counter view, called group selection, where "a group, such as a species or a population within a species, whose individual members are prepared to sacrifice for the welfare of the group, may be less likely to go extinct than a rival group whose individual members placed their own selfish interests first" (1989, p. 7).

Theories on hunter-gatherer-era origins of group bias can help explain why interagency conflict is so fierce today among NYC emergency responders. Just like today's group conflicts among emergency personnel, it can be assumed that competing tribes during the hunter-gatherer era shared similar genetics based on the fact that their travels on foot were limited to about 200–300 square miles (Moghaddam, 2008, pp. 94–99), which usually did not bring them far enough to encounter drastically different races. Today, municipal policemen and firemen share a common genetic and cultural inventory, based on the same demography, neighborhoods, schools, and churches—in some cases, even the same families. Many firefighter and police officer families intermarry, perpetuating the cycle to subsequent generations. "People come to see themselves as members of groups that are in fundamental respects different from other groups, but actually in many cases the intergroup differences are minor," Moghaddam said (2008, p.

51). Despite apparent homogeneity, rivalry seems more natural than cooperation within emergency-responder ranks. Bias is a multigenerational constant, though it can be regulated.

Within inter-group conflict among tribal societies, according to anthropological field studies, conflict and hostility can be minimized through "crossing" the members of each group (Tajfel, 1982). Most notably through intergroup marriage; it appears that firefighters and police buck this theory, which can be explained by their respective identities along vocational and not family lines, within this context. What is encouraging is that "criss-cross" categorization, among other identity reclassifications, is an effective way to attenuate discrimination by breaking down perceived homogeneity of both in- and out-groups. A look at current theories on identity categorization, among others, can help emergency responders understand, and overcome, group bias, when it becomes necessary to create units with a mixed membership.

C. SOCIAL IDENTITY THEORY (SIT)

Much of group bias is based on a person's accepted identity, and the foundational approach in social psychology to this phenomenon is called social identity theory (SIT), pioneered by Henri Tajfel and John Turner in the late 1970s. In general, this fluid, organic theory proposes that people seek a positive, distinct membership from the groups they associate with, sometimes at the expense of other groups.

In the following sections are the SIT's five main "tenets," or postulates.

1. Identity Motivation

In the first tenet, called "motivation," people strive for a "positive and distinct identity" (Moghaddam, 2008, p. 94). Everyone is drawn to groups that allow them to positively express their beliefs and interests. If someone's group is viewed positively by the general population, members will have higher self esteem based on that affiliation (Crisp, 2006). The same is true for emergency-response organizations, which offer distinct histories, commendable missions, and fiercely-protected reputations that satisfy participants' need for something unique and rewarding.

Within the parameters of the first postulate, SIT recognizes that the yearning for distinctiveness can satisfied by an almost infinite number of cultural or vocational identities, which is a promising concept in the formation of new, combined units. Though they share many similarities, the FDNY and NYPD portray very different reputations and subcultures, and these differences attract an array of applicants with diverse abilities, personalities, and backgrounds. If packaged the right way, SWARM units will be attractive to both high-performing firefighters and police officers.

2. Centrality of Social Identity

The second theme of SIT is "centrality of social identity" (Moghaddam, 2008, p. 95), meaning that prospective members will be attracted to what the group represents. Most firefighters and police officers join their professions for something more than job security, adventure, and pensions. Prospective firefighters and police officers are drawn to these organizations with long, storied histories of heroic deeds and sacrifice. Many applicants are attracted to these deep traditions, and they want to be part of a continuing legacy. For example, after the 9/11 attacks, recruitment and interest in the FDNY soared as many young men and women strived to be part of an agency whose sacrifices inspired a nation. Superlative nicknames such as "Bravest" and "Finest" suggest a high level of zeal and competence, providing easily identifiable symbols to the public. In Tajfel's 1978 paper on SIT, social identity is defined as "that part of an individual's self-concept which derives from his knowledge of his membership in a social group (or groups) together with the value and emotional significance attached to that membership" (Moghaddam, 2008, p. 95). After solidifying their identity within their primary agency over the course of a career, it will be a challenge to shift, however slightly, participants' identities towards the new, dual-agency SWARM units. The emotional link that participants have to their primary agency must not be replaced or severed but complemented with the new unit (to be explored later).

3. Identity Through Social Comparisons

The third tenet, "social comparison," recognizes that for someone to feel that they are in an exclusive or special group, it must be compared favorably to some like group. According to Moghaddam, "the nature of the social comparisons we make are influenced by both our perceptions of our group memberships…and the particular group goals we adopt" (Moghaddam, 2008, p. 96). With group identity, the status of the group is judged by how well or how poorly a person's in-group compares to another group. "Intergroup bias frequently takes the form of in-group enhancement rather than outgroup devaluation," according to Gaertner et al. (1990). Units or groups that strive to be the best compared to similar entities can be used as an advantage in the formation of combined units. SWARM units, designed to address complex active-shooter events, would be the first of their kind, but positive comparisons can be made to current counter-terrorism or counter-assault teams in the military or law enforcement units. With its ability to address and mitigate fire, a municipal joint-unit that is trained and prepared to operate in a complex, active-shooter environment (firearms, explosions, fire, smoke, etc.) would have an advantage over current military strike teams.

4. Availability of Cognitive Alternatives

The fourth tenet stresses the importance of "cognitive alternatives" in social identity within a group, which acknowledges that groups are rarely homogenous entities. Tensions between those who are satisfied or unsatisfied within a group are seen as a normal part of group dynamics. SIT is most relevant for those dissatisfied with some aspect of their group. According to the original authors of SIT, the strategy that dissatisfied group members will take to affect change will depend on whether the present situation is seen as either "stable" or "legitimate" (Moghaddam, 2008, p. 96). Also, the influence of authority figures is considered "highly important" on how a group collectively perceives what is acceptable, suggesting how important leadership, both formal and informal, is to group dynamics. Within different units and commands, firefighters, and police all have ideas of what is considered "legitimate" regarding levels of competencies, relations with other units and agencies, acceptable risk in different

contexts, and whether the group is performing to expectations. Dissatisfied members of the group will strive to improve the group's competencies.

5. Identity Improvement Strategies

The final tenet of SIT, "improvement," flows naturally from the fourth step. A minority subgroup that is dissatisfied with the status quo can attempt to improve the group through two processes: "normative" (individual improvements) measures that do not disrupt the balance of power; and "nonnormative" maneuvers that directly challenge the leadership of the group (Moghaddam, 2008, p. 98). Established members of a group will most likely affect change through normative efforts that do not disrupt the power balance, thus preserving their status. If a more concerted attempt to improve the group by dissatisfied members with less status is carried out, it will be seen as a "direct challenge," where a minority group takes on the majority in an attempt to alter intergroup relations (Moghaddam, 2008, p. 98). The normative approach would prove most effective, considering the strictly hierarchal, paramilitary model common in emergency response organizations.

Within the SIT framework, for a SWARM unit proposal to succeed, the idea would require "buy-in" from leaders from both sides, and the most effective changes would be made through legitimate means. When combined, these final two tenets reveal how those who seek improvement, both self and organizational, can be a driving force in any group, even large-scale fire and police departments.

D. USING COOPERATION TO MITIGATE BIAS

Social identity theory has become the springboard for an array of social psychology theories that took aim at the group-bias phenomenon. In 1990, a paper presented in the *Journal of Personality and Social Psychology* explained how cooperation between groups can lower intergroup bias, even from groups with a history of competiveness or hostility. Under the social categorization framework, cooperation can dissolve perceived boundaries among two merged groups, who had not previously identified with each other. "Cooperation degraded the two-group representation and

induced the memberships to recategorize themselves primarily as one larger group," according to the 1990 article on cooperation and group bias (Gaertner et al.).

Intergroup cooperation is seen as a "complex process" dependent on several factors, including interaction, common goals, and a common destiny. Another important consideration is the nature of the respective group's previous relationship, suggesting that groups that are historical rivals will require a more delicate approach than groups that were not fiercely competitive. Inter-group contact becomes even more complicated as certain initiatives designed to dissolve boundaries and promote cooperation may have the opposite effect, which can trigger in-group bias among communities that overlap. And a reward structure alone is not a strong enough motivator to ensure intergroup cooperation, requiring a more internalized mechanism to encourage participant acceptance.

E. SELF-CATEGORIZATION AND RECATEGORIZATION

As advances based on SIT became more refined, the concept of categorization, and later self-categorization and recategorization, gained discipline-wide acceptance. "At the foundation of intergroup relations is the basic process of categorizing the world and identifying individuals as belonging to different groups," stated Moghaddam (2008, p. 29). Tajfel's research revealed that categorization results in two cognitive consequences: exaggerated differences between groups and minimized differences within a group (Moghaddam, 2008, p. 31).

Self-categorization theory is described as "an infinitely malleable, dynamic cognitive strategy through which the self can be categorized in contrast to many different entities—such as other individuals within the group—or as part of an ingroup that stands in contrast to outgroups…" (Moghaddam, 2008, p. 101). The theory states that perceptions, whether accurate or not, directly influence intergroup bias (Crisp, Stone, & Hall, 2006, p. 230). Ingroup identification shows that the relationships between identification, self-stereotyping, attitudes, and performance are not static but dynamic and fluctuating (Crisp & Abrams, 2008, p. 272). The malleable nature of identity in self-categorization theory is most important to organizations attempting to create a new entity.

Gaertner et al. claimed, “Intergroup cooperation promotes intergroup acceptance because it reduces the cognitive salience of the intergroup boundary” (1990, p. 693). In plain language, when people who represent different groups are thrust into same space and expected to cooperate, stereotypes and reflexive bias are minimized, paving the way for more authentic interaction. To drop barriers, members of the respective groups must meet regularly in training exercises. In his 2002 book, *The Tipping Point*, author Malcom Gladwell cites a study in a Manhattan housing project where people where asked who their closest friends were, 88 percent of respondents listed their closest friend as another resident of the same building. “Proximity overpowered similarity,” according to Gladwell (2002, p. 35).

An extension on self-categorization theory is the meta-contrast principle, which states: “two groups will be perceived as such when the differences between the groups outweigh the differences within them, is central” (Crisp et al., 2006, p. 231). In other words, people tend to emphasize the differences between their group and an outside group, rather than accentuating the differences among members within their group. According to self-categorization, similarities among groups will weaken cognitive boundaries, allowing two groups to be perceived as a single subordinate entity, though there are dangers in too much similarity.

If members of the joint group can be convinced that their counterparts share common traits and goals, eventually they will be seen as one. “Cooperative tasks,” according to research, will encourage a common identity (Crisp et al., 2006, p. 231). One study proved that integrated seating patterns among a racially diverse sample group lowered bias and shifted perceptions to an “inclusive single group” (Crisp et al., 2006, p. 231). Intense, realistic active-shooter scenarios where firefighters and police officers in SWARM units train side-by-side would qualify as a cooperative task that would encourage a common identity, which must be established before an incident. Commenting on the importance of pre-incident interaction, Joe Downey said, “Unless they [participating firefighters and police officers] do it prior to the event, with teams working together, it is going to be difficult to work together that day” (personal communication, September 7, 2010). A French case study on improvisation in a crisis,

which cited at least three international fire incidents, claimed "the absence of procedural memory among the groups hinders improvisation," and that "the groups involved in this case had not developed routines or procedures that would have enabled them to work together" (Roux-Dufort & Vidaillet, 2003, p. 102). During a Mumbai-style attack, the tactical situation will be very fluid and an effective response team will have to make instantaneous decisions, which should be made as an extension of, and not in lieu of, training.

As the SWARM units form and participants are encouraged to dissolve previously-held social barriers against members of a perceived outgroup, who are now part of a new ingroup, re-categorization efforts could have the opposite effect and actually increase bias. "People who perceive their group as critical for self-definition, blurring boundaries can be problematic," according to research published in a 2009 article in *Basic and Applied Social Psychology* (Hall, Crisp & Suen, p. 245). Organizers of the SWARM units would have find ways to drop boundaries without activating a defensive bias reaction.

In recategorization, the individual shifts their affiliation from one group to another, under the right conditions. Early research on self-categorization theory showed that "modifying members' representations even slightly may encourage the initiation of more constructive and cooperative intergroup relations" (Gaertner et al., 1990, p. 703). The theory implies that identity is not always rigid and static, but dynamic, opening up the possibility that allegiances can shift; however, there are some caveats related to recategorization.

Some research suggests that recategorization may actually increase group bias among people that strongly identify with the original group. "It is argued that such unwanted consequences of recategorization will only be apparent for perceivers who are highly committed to their ingroup subgroups," according to Crisp et al. (2006), "it was found that maintaining the salience of subgroups within a recategorized subordinate group averted this increase in bias for high identifiers and led overall to the lowest levels of bias."

Not all identities are equal. People who loosely associate with a group ("low identifiers") will not be as defensive if they perceive a threat to their affiliation to the group, but the "high identifiers," who are most likely to exhibit ingroup favoritism, react more strongly to challenges to their ingroup. The high-identifier bias tendency has been proven in studies on organizational mergers (Crisp et al., 2006, p. 232). According to research, low distinctiveness between the original group and subordinate group contributed to ingroup bias, but not for those with looser affiliations. "For high identifiers, low distinctiveness led to increased bias relative to high distinctiveness, but this was not the case for low identifiers," as stated in a 2006 article in *Personality and Social Psychology Bulletin* (Crisp et al, p. 232). Recategorization is still valid with high identifiers, but as the two groups integrate, mechanisms must be in place to maintain distinctiveness. What can be emphasized to SWARM unit members is that the integration is intended to be a mini-merger, as participants remain full members of their respective fire and police departments, which reduces the risk that similarities between the original group and the newly formed-unit will trigger bias. Also, organizers can stress that the combined expertise of both firefighters and police officers will make the unit functional, implying that a certain amount of distinctiveness is not just desired, but necessary.

F. DUAL IDENTITY AND CROSS CATEGORIZATION

Though it is an essential concept in understanding and minimizing bias, it would appear that recategorization, by itself, would not offer an effective identity strategy for firefighters and police officers. Theories that allow for multiple, shifting social categorizations may prove more effective in real-world scenarios.

The cross-categorization approach allows for categorical cross-cutting, where a person can simultaneously hold overlapping memberships across "multiple dimensions" (Hewstone et al., 2002, p. 592). Overlapping memberships reduce bias because social categorization becomes more complex, which also decreases the importance of any one group's distinction. Cross categorization also makes members aware that outgroups are not homogenous but consist of subgroups. Cross categorization, research proves,

increases “intracategory” differences as “intercategory” differentiation is reduced (Hewstone et al., 2002, p. 593). Participants will acknowledge differences among members of their ingroup, and see fewer differences with outgroups, as boundaries dissolve. Cross categorization is less effective in reducing bias in simple categorizations, but it shows merit when bias is directed against “double-out-group targets” (Hewstone et al., 2002, p. 592).

The key to participant compliance may be simultaneous maintenance of both original and new identities (respective vocation and SWARM unit)—a theory known as the “dual identity” approach. Because of the great pride that they take in their professions, most emergency responders can be considered prototype “high identifiers,” who are most resistant to new affiliations. Even so, identity transfer does not have to be zero-sum related to group affiliations; people hold many identities simultaneously. For example, the average firefighter can associate with an almost endless number of formal or informal groups, including profession, rank, specialty, parenthood, nationality, neighborhood, appearance, age, ethnicity, professional sports’ affiliations, food preferences, alma mater, or political party.

The most successful joint vanguard units would encourage participants to see the new unit as a complement to their many other professional identities and not as a replacement. “If simultaneous categorization is optimal for observing reductions in intergroup bias, then it may hold the key to avoiding the propensity for heightened ingroup favoritism associated with high subgroup identification,” according to Crisp et al. (2006, p. 236). As opposed to recategorization, “simultaneous categorization” ensures the salience of their original identities within the new, common group, which avoids threats to identity and distinctiveness.

Firefighters and police officers participating in SWARM units will not wish to abandon their closely-held vocational identities, nor would they need to. Crisp et al. (2006, p. 237) said that “maintaining the salience of original identities within this new subordinate common ingroup…could avoid any threatening consequences to subgroup members.” Researchers have found that the dual-identity approach was more effective than just recategorization at reducing intergroup bias (Crisp et al., 2006, p. 237). Because

"distinctiveness" (as per the first tenet of SIT) is preserved, meaning their original identity is secure, participants will more readily bond with the new, subordinate group—in this case, the SWARM units.

An effort to promote the advantages of dual identity, or simultaneous categorization, will have to be complemented by mechanisms that make the new, subordinate group appear favorable; dual identity should not be forced. The identity transition should genuinely trigger a positive reaction where joint-group members truly identity with the SWARM unit, and use sincere first-person narration when describing the group (i.e., "we"), which is consistent with another theory on identity and bias called the common ingroup identity model (CIIM). CIIM states that intergroup relations improve when associations shift to "we." The recategorization occurs when former outgroup members are seen as more attractiveness, and a new, subordinate group is achieved. It would be unrealistic to assume that dual identity is the panacea for group bias, but "simultaneous categorization intervention can mitigate against this (group bias) reactivity" (Crisp et al., 2006, p. 241).

G. CIIM, FROM US AND THEM, TO WE

Common ingroup identity model (CIIM) states that intergroup relations improve when associations shift from "us" and "them" to "we" (Crisp et al., 2006, p. 230). "Common Ingroup Identity Model (CIIM)," according to social theorists, "rests on the notion that by changing the nature of categorical representation from 'us' to 'them' to a more inclusive 'we,' it is possible to reduce intergroup bias" (Crisp et al., 2006, p. 230). Other psychologists propose that "to reduce bias, existing boundaries between groups should be eliminated so that both groups are included as one superordinate group" (Crisp, Turner, & Rhiannon, 2010, p. 32).

With CIIM, contact blurs intergroup boundaries and subsequent recategorization into a shared identity (Crisp & Abrams, 2008, p. 257). Blurring group lines is exactly what SWARM units would need. Hall, Crisp & Suen said, "The dissolution of category boundaries has become a crucial factor in creating more harmonious intergroup relations" (2009, p. 245). Eventually, participants would have to identify with the new group, but

some previous categorizations that reinforce distinctiveness would have to stay intact. It is possible to benefit from CIIM, while simultaneously preserving highly-valued subgroup identities as intergroup boundaries are blurred (Crisp & Abrams, 2008, p. 272).

By itself, recategorization from "them" to "we" may not be adequate to promote intergroup harmony. "One of the main debates surrounding the common ingroup identity approach," according to a recent paper, "is that it may be effective only at reducing intergroup bias in contexts in which group members are not strongly committed to the ingroup" (Crisp et al., 2010, p. 44). Those not strongly committed, known as low identifiers, would normally not fill the ranks of emergency responders. Most research suggests high identifiers require different triggers to dissolve group bias, compared to low identifiers, but recent paper claims otherwise. "Here we showed that crossed categorization reduces intergroup bias irrespective of participants' level of identification with the ingroup" (Crisp et al., 2010, p. 44).

It would benefit SWARM units if procedures and training encouraged cooperation, instead of having leaders order participants to work together; the bias shift should occur naturally. According to an article in *Group Process & Intergroup Relations*, "…studies have raised the possibility that it may not always be the best strategy to promote intergroup harmony, as it sometimes leads to increases in intergroup bias" (Crisp et al., 2010, p. 251). Ordering strong-willed firefighters and police officers to change their perceptions would certainly trigger the opposite response. "Bringing groups together, particularly when they are similar on an important dimension, might therefore arouse motivations to achieve positive distinctiveness, which could exacerbate rather than alleviate intergroup conflict," according to Crisp et al. (2010, p. 251).

What is needed to neutralize negative reactions, possibly due to a threat to distinctiveness, is a set of common goals that highlight group members' interdependencies. Early training could show police officers the importance of firefighting techniques as it relates fire extinguishment and searches in zero-visibility smoke environments, and how those skills are relevant in evacuating victims or hostages at a complex terror attack. Conversely, training scenarios that highlight the importance of force protection, weaponry and close security can benefit participating firefighters not

just operationally but cognitively. Research led by Muzafer Sherif in the 1960s proved that common goals helped form a common identity, improving intergroup relations (Crisp & Abrams, 2008, p. 247). With the help of real-life training triggers and other mechanisms, favoritism of the original subgroup (fire or police) will subside as the SWARM unit gains acceptance.

The emphasis on the new, subordinate group, along with common goals and interdependencies, can be reinforced in the training curriculum. In the 20 years since it was created, Joe Downey explained that New York Task Force 1 (NY-TF1) has deployed about a dozen times. Part of what has made the taskforce successful is combined training and periodic equipment maintenance. "They [participating firefighters and police officers] are told, you work together for a common cause," Joe Downey said, "we are training together and it seems to work" (personal communication, September 7, 2010). According to CIIM, common goals help to reduce anxiety and promote group harmony. Implicit in the formation of the SWARM units is the belief that its goals overlap with the missions of both agencies.

Considering his experience with Task Force 1, Chief Downey was asked how the joint, active-shooter unit could benefit from joint training and other pre-incident initiatives. "If you direct it as a taskforce, like we do on the outside with New York Taskforce 1, the guys pre-drill together, they are mobilized together, [and] they are taking care of equipment together," Joe Downey said. "They are [also] working together; if you have that incident where you are going to encounter firearms, explosions and fire, for example, at least they [firefighters and police officers] know each other" (personal communication, September 7, 2010).

The distinction between cross-categorization (dual identity) and CIIM is subtle, but important in how the members see themselves. In CIIM, identity is simplified as two groups are brought together within the context of a shared identity (Crisp et al., 2010, p. 33). With the dual-identity model, self identity becomes more complex, as participants must recognize the four subgroups that are created when two groups combine (in this case: firefighter, firefighter/SWARM unit member, police officer, police

officer/SWARM unit member). The cognitive complexity may promote more realistic and favorable constructions of the "target," or fellow participants from an outside agency.

H. MINIMAL GROUP PARADIGM

Other psychological theories reinforce the idea that identity can be ascribed to an almost infinite number of associations and combinations. The minimal group paradigm, another SIT-based theory, confirms the idea that people keep multiple identities simultaneously, which reinforces the notion that group bias can be built on subtle or abstract differences. According to Moghaddam, "the minimal group paradigm (Tajfel et al., 1971) provides strong evidence that just about any criterion for social categorization can be used by group members to construct a positive and distinct identity for themselves" (2008, p. 94). An emergency responder who identifies with his joint-unit, along with his primary agency or command, is well within the framework of minimal group paradigm.

With SWARM units, recategorization will not require participants to abandon their greater vocation, but will require them add a sub-identity with a group of people that they have traditionally seen as outsiders. As stated earlier, the trick is to maintain the "saliency," or prominence, of the primary group, as the participant eases into the new, mixed group, thus, securing some aspect of distinctiveness in the vanguard unit. Some type of physical indicator to satisfy the primary-group saliency requirement, possibly a patch or other item on the uniform (if they wear the same ensemble), may provide participants with the cues they need to internally balance both their primary and new group. "There are few limits in the criteria that could be used by people to categorize and to differentiate between human groups," Moghaddam said (2008, p. 36). For instance, at the functional level, a crucifix is just two pieces of wood (or other material) joined together, but it provides a power symbol for Christian identity and differentiation (Moghaddam, 2008, p. 36). Firefighters and police officers may not be as reverential to their equipment as they would a religious icon, but they still find strong symbolic value in

the tools or physical objects that help to define their vocations (guns, batons, hoses, helmets, Halligan forcible-entry tools, etc.). The challenge to unit organizers is finding out how to harness symbolism effectively.

In time, as trust builds among members of SWARM units, and a better understanding of firefighters' and police officers' respective levels of expertise, previous boundaries may fall. "When group affiliation is meaningful to member's self-identities, intergroup cooperation that allows each group to make favorable and distinctive intergroup comparisons may permit the memberships to develop mutual respect for one another without threatening their own positive group identities" (Gaertner et al., 1990). Another study found that by having intergroup participants list shared characteristics, ingroup/outgroup differentiation was reduced (Crisp & Abrams, 2008, p. 261). Firefighters and police officers are similar in their commitment to public service, pride in their jobs, especially under dangerous conditions, and a sense of community. As participants realize that their counterparts in sister emergency-response agencies share many of the same values through different, but complementary, missions and operations, social bonds can form without threatening distinctiveness.

Another way to drop barriers between firefighter and police personnel is to emphasis a shared identity outside of the realm of emergency response. Many firefighters and police officers are military veterans, which is an extremely powerful common identity. For example, besides moving up the ranks to reach their respective agencies' highest office, New York City Fire Commissioner Salvatore J. Cassano and Police Commissioner Raymond W. Kelly are both combat veterans of the Vietnam War (New York City Fire Department, Salvatore J. Cassano, 2011; New York Police Department, Administration/Police Commissioner, 2011). At the unit level, if the FDNY recruits firefighters for the SWARM units from its pool of military veterans with tactical training and combat experience, who are familiar with firearms and close quarters combat, it would benefit the group at the operational, social, and cognitive levels. Firefighters with previous tactical training may be accepted by police officers quicker through the common identity.

Ideally, participants of the SWARM units will start to see each other as people, and not caricatures, as they shift to "personalized rather than categorized interactions" (Gaertner et al., 1990). New opinions of fellow participants along with increased cooperation, facilitated through joint training, will cause members of a new group to eventually see themselves as a one (subordinate) unified group.

I. REDUCING ANXIETY TO LOWER THE STEREOTYPE THREAT

Participants must perceive their counterparts in the SWARM unit as honestly and realistically as possible, and not resort to simplified, usually inaccurate, conclusions about another person's worth. According to one paper from the *European Review of Social Psychology*: "Stereotype threat is 'a situational predicament—felt in situations where one can be judged by, treated in terms of, or self-fulfil[led] negative stereotypes about one's group'' (Crisp & Abrams, 2008, p. 243). The researchers cite previous studies that link a tendency towards stereotyping to anxiety. Negative inter-group interactions can be seen as a reaction to perceived threats, discrimination, or rejection. Other research confirms that "implicit prejudice is malleable and can be reduced using varied methodologies," according to a paper in *Basic and Applied Social Psychology*, "these include learning to negate explicitly presented stereotypical information" (Hall, Crisp, & Suen, 2009, p. 245).

When participants are made to feel psychologically secure, stereotypes and anxiety dissolve, and categorization (as per CIIM) shifts from "us" and "them," to "we" (Crisp & Abrams, 2008, p. 247). There are several proven ways to lower anxiety, and subsequently stereotyping, when groups combine or interact. "Intergroup anxiety is likely to arise where there has been minimal previous contact and when there are large differences in status (Stephan & Stephan, 1985)," according to Crisp et al. (2008, p. 247). These two issues, 'previous contact" and status are easily addressed. A joint unit that trains regularly will satisfy the contact requirement. With training, members of the SWARM units will become more proficient in their new tactical roles as the unit

solidifies socially. For example, a study of Muslim-Hindu relations proved that "high-quality" contact among participants made for more positive out-group perceptions (Crisp & Abrams, 2008, p. 249).

Regarding status, participants in the joint unit will be comprised of firefighters and police officers of comparable ranks, respectively. It is likely that the NYPD will man the unit with personnel from Emergency Service Units (ESU), who are technically detectives, but operationally, they perform as specialized police officers (SWAT units, etc.) and not as investigators. Immediate leadership will come from FDNY company officers (lieutenants or captains), or NYPD patrol supervisors, who are either sergeants or lieutenants; despite different titles, the ranks are comparable in span of leadership and salary.

With NY-TF-1, fire and police supervisors share dual-leadership roles, suggesting the importance of member equality. During disaster deployments, a fire logistics leader is complemented by a police logistics leader, and vice versa, according to Joe Downey. Aside from equality in leadership, firefighters and police officers in the joint Mumbai-style unit would be considered equal members, acknowledging that skill sets from both services are necessary to complete the mission, as perceptual cues will encourage "reduce[d] intergroup differentiation" (Crisp & Abrams, 2008, p. 247). According to clinical tests, "members of high-status groups tend to show more bias than members of low status groups" (Hewstone et al., 2002, p. 585)

With USAR's New York Task Force 1, which is the only current example of a truly joint FDNY/NYPD unit, members of both agencies are expected to treat each other as equals. "When we go out the door," said Battalion Chief Joseph Downey, "we are evenly matched with PD." Chief Downey said that firefighters and police officers in NY TF-1 are expected to share hotel rooms when they deploy, providing another mechanism to promote equality and cooperation. As far emphasizing the same status, "I think it works because the positions are spelled out" he added, "everything is divided fifty-fifty" (personal communication, September 7, 2010). Problems related to the SWARM units will go beyond group bias if all components are not shared equally. "Majority groups tend to use their superior power and resources to construct requirements for inclusion in

the elite group that serve as barriers to exclude minority group members" (Moghaddam, 2008, p. 35). Just as NY-TF1 is controlled by a third party, the New York City Mayor's Office of Emergency Management (OEM), instead of the NYPD or FDNY, it would not serve the SWARM units well to be absorbed into one of the participating emergency response agencies. If one agency dominates resources or leadership, the joint unit will not function to its full potential.

J. TERROR MANAGEMENT THEORY AND MORTALITY SALIENCE

Another approach to explain the dynamics of identity and group bias is called Terror Management Theory (TMT), pioneered by cultural anthropologist Ernest Becker in the 1960s and 1970s (Greenberg et al., 1990, p. 308). Despite the misleading name, TMT does not refer to counterterrorism or terrorism mitigation strategies. Instead, TMT "proposes that people have a need for self-preservation and that this need is frustrated by their awareness of the inevitability of their own death" (Hewstone et al., 2002, p. 582).

TMT is based on two primary postulates: one, like all living things, humans are motivated by self-preservation; and two, humans are self-aware of their mortality. When the two postulates are combined, the thought of certain death, whether conscious or unconscious, "gives rise to potentially overwhelming terror," according to Moghaddam (2008, p. 59). Simply stated, mortality salience, according to TMT, increases ingroup favoritism.

According to McDermott and Zimbardo, "Terror management theory has demonstrated that reminding people of their mortality affects their evaluations of others" (2007, p. 363). To create a buffer against the anxiety that felt concerning their certain death, people will set up a belief systems and cultures in an attempt to place some order on their lives (Greenberg et al., 1990, p. 308). Culture provides order, meaning, value, along with symbolic immortality, which raises a belief holders' self esteem. According to a 1996 article in *European Journal of Social Psychology*, "If thinking about death threatens self-esteem, the self-esteem hypothesis can explain the effects of MS [mortality salience] on intergroup bias" (Harmon-Jones, Greenberg, Solomon, & Simon, 1996, p. 681).

Terror management theory (TMT) highlights the self-protective mechanisms of culture (Moghaddam, 2008, p. 61), which provide another way to separate ingroups and outgroups. Under TMT, ingroup members and their common beliefs are portrayed more positively, compared to outgroup members and their perceived dissimilar beliefs, which are seen as threats (Hewstone et al., 2002, p. 582). Moghaddam stated, "Terror Management Theory suggests that when organizing for intergroup contact, there is an urgent need to educate each group about beliefs, values, and normative systems other than their own" (2008, p. 64).

Anyone who routinely performs in life-threatening situations, such as emergency responders, who have witnessed civilian and colleague fatalities, would be expected to experience some form of anxiety or "terror," whether consciously or unconsciously, which strongly influences group favoritism and interaction. A study of the 1995 Oklahoma City bombing showed that stress for emergency responders is most pronounced when performing body recovery and identification, and highest when children were involved (Paton & Violanti, 2007, p. 235).

> If reactions to others depend on the implications of agreement and disagreement for an individual's worldview, and if people's beliefs need to be defended because of the anxiety buffering function that they serve, then it follows that reminding people of what they are most frightened of should increase their tendency to respond positively to those who are similar and negatively to those who are different. Thus, reminding people of their mortality should increase the positivity of evaluations of those who bolster the cultural worldview and the negativity of evaluations of those who threaten it. (Greenberg et al., 1990, p. 309)

Fortunately, mortality salience can be minimized if a person feels some control over their own death. According to a 2008 article in *Social Psychology*: "Beliefs of control over death in particular and over life events in general may therefore decrease the impact MS may have on the development and self-perpetuation of intergroup conflict" (Niesta et al., 2008, p. 54). Another benefit of training and frequent intergroup interaction specific to Mumbai-type terrorism will make participants in the SWARM unit more capable and confident, which will lower the MS effect.

Surprisingly, there are some benefits to the MS effect. Under certain conditions, people can be more charitable when events remind them of their mortality. Psychologists asked, "Why is it in times of crisis, disaster, and death that individual and collective help is offered so generously?" (Niesta et al., 2008, p. 53). Consistent with TMT, profound acts of benevolence are directed at people or groups that share the donor's "worldview," thus improving self-esteem. Also, targeted generosity matches well with the theory of selective altruism based on humanity's hunter-gatherer past. The challenge would be to widen the perception of the ingroup, including all SWARM units members, widening the arc of generosity.

Studies show that the "benevolence norm" can be primed into participants under mortality salience. Pro-social attitudes and behaviors were nurtured through "self-transcendent norms," following reminders of mortality. It is not exactly clear how cognitive priming can alter bias norms, but the idea is compelling. Other research, which combined SIT, TMT and MS, found "that priming group permeability nullified the MS effect on ingroup favoritism" (Niesta et al., 2008, pp. 54, 56). Group barriers can dissolve, even in recognition of TMT and MS mechanisms.

K. NEED FOR PRE-CRISIS PREPARATIONS

For the joint FD/PD unit, or any interagency entity for that matter, the time to break down group barriers is not during a life-threatening situation, where people have tendency to cognitively retract, but during joint training and other low intensity interactions. When a Mumbai-type terrorist attack does occur, it would be ideal if firefighters and police officers already viewed their counterparts as genuine co-members in the SWARM units and not intruders. Pre-existing relationships and protocols are essential. "We observe that the stakeholders involved in crisis persisted in repeating their habitual practices for the whole duration of the crisis," according to the French study on improvisation (Roux-Dufort & Vidaillet, 2003, p. 88). Joint maneuvers and training, and acceptance of counterparts, must be built into "habitual practices" before the crisis occurs.

Research confirms that group and organizational adaptability is reduced during a crisis, but "for trained personnel, crises enhance alertness and thinking skills" (Paton & Violanti, 2007, p 237). A well-trained SWARM unit member will be better psychologically equipped to adjust to the chaos of a Mumbai-style terrorist attack; otherwise, participants will revert to their most basic single-agency tendencies. New York City emergency responders "should be given opportunities to develop new solutions, to change quickly from the role that is normally theirs to other roles" (Roux-Dufort & Vidaillet, 2003, p. 93).

> In crises, organizational members tend to shy away from creativity and flexibility, and to have difficulties drawing the whole picture of what is going on. Other types of behavior identified in the literature on crisis management show that, in crisis situations, decision makers are tempted to rely on familiar routines, procedures, and frames of reference through which they view the situation, and to strive to manage it, even though these procedures and frames may be inappropriate for the situation at hand (Kilpatrick 1969. Stubbart 1987; Vidaillet 2001). Routines help reduce uncertainty by applying familiar sequences of action formalized. (Roux-Dufort & Vidaillet, 2003, p. 93)

L. GROUP LEADERSHIP

An examination of group bias for high performing groups, such as a joint FDNY/NYPD strike team, would not be complete without a brief look at group leadership and its influence on perceptions and behavior. "The values, attitudes, and goals that leaders inspire others to adopt and to follow are ones that serve the group as a collective and that define membership of the group," according to a research paper on leadership in salient groups, "thus, leaders are able to transform individual action into group action" (Hogg Martin, Epitropaki, Mankad, Svensson, & Weeden, 2005, p. 991). Dual-agency leaders, either formal or informal, of the SWARM units will have a profound affect on whether the participants identify with the group positively.

In a study on leadership and its effects on ingroup/outgroup perceptions, the authors said, "According to the social identity theory of leadership, a leader is often perceived as the most representative or prototypical member of the group, particularly in cases of high group salience or in cases where members and leaders identify strongly

with the group (Hains et al., 1997; Haslam & Platow, 2001; Hogg et al., 1998)" (Pittinsky & Welle, 2008, p. 515). As the most visible, crucial members of the group, leaders must have a positive opinion of their counterparts from the sister agency as the leaders' opinions and prejudices will proliferate through the combined group.

It would be unrealistic to assume that SWARM unit members, who are considered high identifiers, would blindly follow designated leaders. It is crucial that the leaders exhibit traits that are considered appropriate to the group's identity. According to a 1997 article in *Personality & Social Psychology Bulletin*, "Under conditions of high salience, perceptions of leadership effectiveness and leadership effectiveness were influenced by the perceived prototypicality of the leader; prototypicality leaders were expected to be more effective and acceptable than nonprototypical leaders" (Hains, Hogg, & Duck, 1997, p. 1096). To avoid negative reactions, unit leaders would have to find ways to promote cooperation and a collective identity in the group that does not appear atypical by its membership.

It is up to the leaders to diffuse any tensions between firefighters and police officers. "The leader's actions in displacing aggression must be carefully monitored and controlled," according to Moghaddam, "by mobilizing collective action against an outgroup, a leader can unleash aggressive, potentially destructive sentiments onto perceived dissimilar targets and influence people to rally around a flag" (2008, p. 63). If a leader accepts the SWARM unit as another identity, sister-agency counterparts will not be seen as outsiders, and subordinates will pick up on those cognitive cues.

Lastly, leaders must treat everyone in the unit as equals. Hogg et al. explain, "In salient groups, effective leaders need to treat all members fairly and equally as common group members" (2005, p. 994). As explored in the section on stereotype threats, equality in status and function lowers perceived differentiation between intergroups. The same bias dynamics at work at the participant level will be even more important for group leaders.

To conclude, the theories on group bias based on social identity theory are meant to be complementary and interchangeable, depending on the specific bias dynamic.

Intergroup bias, which is also influenced by history, competition for resources, and other phenomena, is more complex than what can be explained by cognitive psychology, but this inquiry was meant to be a beginning of a study on firefighter and police officer identities, especially in the formation of SWARM units. According to Paton & Violanti (2007, p. 242):

> Recognition of the risk posed by terrorist events and the importance of learning from them must be consolidated into a culture that espouses the policies, procedures, practices, and attitudes required to facilitate a capacity for adaptive response to an uncertain future.

VI. RECOMMENDATIONS AND CONCLUSIONS

A. RECOMMENDATIONS

1. General

1. Fight a network with a network. Form dual-agency SWARM units to engage a Mumbai-style terrorist threat.

2. Within the Joint Group

1. Promote pre-incident training for the SWARM units, which will improve both operational readiness and group harmony.
2. Encourage group cohesiveness in the joint unit but not at the cost of distinctiveness.
3. Ensure that the SWARM units are portrayed positively compared to like groups.
4. Institute training and operational triggers to encourage a shift from "us" and "them" to "we" (as per CIIM).
5. Include military combat veterans in fire service recruitment efforts for SWARM units.
6. Emphasize cooperative tasks and common goals that drop simplified stereotypes.

B CONCLUSION

Unlike the 9/11 attacks, which surprised many, global trends in paramilitary terrorism are evident. Most municipalities in the United States have an opportunity to prepare for Mumbai-style attacks before they occur in their respective cities. For emergency responders to perform in this chaotic, hostile environment, adaptation will require more than new procedures and equipment; it will require a different way of thinking that bends traditional identities and roles and shatters group-bias tendencies as dual-agency, SWARM units form. A widening sense of group identity and purpose, inspired by a greater cause, would indicate more than progress for emergency responders, but an incremental improvement in human social development.

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APPENDIX A. DATA CHART FOR THE TOTAL 262 CODED ENTRIES (ALL THREE INTERVIEWS)

Note 1: The following abbreviations were used in the graph to identify interviewees:

- JWP = Joseph Pfeifer
- JRD = Joseph Downey
- XYZ = anonymous police source

Note 2: The final column (frequency) refers to the number of times an entry was used in the graph. For example, the individual code "police caught above fire" was listed four times under the primary codes of preplanning (1), force protection (2), fire as a weapon (3) and interdependencies (4). Because that phrase was relevant to many categories, in this case four, it was repeated as necessary.

Interview Coding					
EPP	Code	Sub-Code	Subject	Interviewee	Frequency
Preparedness	Active-Shooter	at regular A-S	Joint Units valid in regular active-shooter with possible darkness, etc.	XYZ	4
	Active-Shooter	Joint Training	Incidents are never the same at A-S, but concepts and principles are the same	XYZ	2
	Active-Shooter	Multiple Shooters	A-S is usually one shooter, terrorist A-S is usually multiple shooters	XYZ	2
	Active-Shooter	Specialization	If avg. patrolman trained in A-S, can mitigate possible school siege	XYZ	2
	Active-Shooter	Time	The main issue is speed of engagement, based on case studies.	XYZ	1
	Active-Shooter w/ Fire	Fire/smoke	PD does not train for low-light or smoke, or even noise.	XYZ	1
	Active-Shooter w/ Fire	Mitigation	Must find the best way to mitigate.	XYZ	1
	Active-Shooter w/ Fire	Priorities	Must figure out priorities w/ people trapped: fire or shootout?	XYZ	2
	Active-Shooter w/ Fire	Psychology of Fire	Many psychological barriers for both terrorists and rescuers with fire/smoke.	XYZ	1
	Active-Shooter w/ Fire	Simple Attacks	Low tech is easy to do, with tremendous impact.	XYZ	2
	Awareness	General Training	Proposes some type of awareness training for all FFs	XYZ	2
	Awareness	Specialization	Limited specialization may not be best for fast, dynamic incidents.	XYZ	2
	Capability	Breaking Point	In exercises, there's discrepancy in what is promised versus capability.	XYZ	2
	Capability	General Training	Idea is to have first-arriving patrolman "slow down" the situation.	XYZ	2
	Capability	Joint Unit Training	NYC responders are not ready to integrate at Mumbai-type attack.	XYZ	3
	Capability	Priorities	During attack, FDNY may have to put fire out for PD to proceed.	JRD	1

	Capability	Specialization	Trend in law enforcement towards specialization of select few.	XYZ	1
	Capacity	Assault Teams	Average assault team is two officers.	XYZ	1
	Capacity	Assault Teams	Average patrolman cannot integrate with SWAT team.	XYZ	1
	Capacity	Breaking Point	Important to realistically claim operational limits in exercises	XYZ	2
	Capacity	Breaking Points	Expanding agencies' breaking points with training, group/org bias.	JWP	1
	Capacity	Joint Unit Training	NYC responders are not ready to integrate at Mumbai-type attack.	XYZ	4
	Capacity	multiple weapons/IIDs	Multiple weapons/IIDs attacks can overwhelm resources.	JWP	1
	Capacity	Time	Need for expeditious response.	JWP	2
	Collaboration	CIMS	CIMS does not encourage true collaboration, too much gray area.	JRD	2
	Collaboration	Priorities	During attack, FDNY may have to put fire out for PD to proceed	JRD	3
	Collaboration	Separation	PD and FD operate inside a vacuum.	XYZ	1
	Command	Building Vulnerability	Better if pre-organized than executed ad hoc.	JWP	3
	Command	CIMS	CIMS does not encourage true collaboration, too much gray area.	JRD	1
	Command	Joint Training	Would like to see more joint training, but need new parameters.	JRD	1
	Command	Joint Training	Interdisciplinary training must be done at all levels.	XYZ	1
	Command	Separation	PD and FD operate inside a vacuum.	XYZ	2
	Delivery	Assault Teams	Average assault team is two officers.	XYZ	2
	Delivery	Joint Tabletops	Need for joint tabletops	JWP	2
Preparedness	Delivery	Specialization	We've [PD] specialized into a corner: too much reliance of special units.	XYZ	2
	Delivery	Specialization	Limited specialization may not be best for fast, dynamic incidents.	XYZ	1
	Delivery	Time	Need for expeditious response	JWP	1
	Delivery	Time	The main issue is speed of engagement, base on previous studies.	XYZ	2

	Delivery	Time	ESU has SWAT training, but may not get there in time.	XYZ	1
	Delivery	Unit Make-up	The biggest enemy is time.	XYZ	1
	Enemy Adaptability	Escalate	Will terrorists up the ante as they learn from previous incidents?	XYZ	1
	Enemy Adaptability	Time	Terrorists think long-term, may fortify building like Beslan next time.	XYZ	1
	Equality	NY-TF1	OEM in charge of USAR.	JRD	2
	Equality	Positions	Pre-set, explicit positions - all divisions made 50/50.	JRD	1
	Equality	Uniforms	All USAR members wear same uniform, ID'ed as NY-TF1.	JRD	2
	Equipment	Joint Unit Training	Need for proper training and equipment for joint units.	JWP	4
	Fire as a Weapon	at regular A-S	Joint units valid in regular active-shooter with possible darkness, etc.	XYZ	2
	Fire as a Weapon	Joint Unit Training	Proper training and equipment for joint units.	JWP	3
	Fire as a Weapon	NYC Attack	With European terror alerts, threat of Mumbai-type attack increasing.	XYZ	2
	Fire as a Weapon	PD above Fire	Police caught above fire.	JWP	3
	Fire as a Weapon	Simple Attacks	Will lead to more attacks - easier for terrorists to train.	JWP	1
	Fire as a Weapon	Simple Attacks	Use of less skilled attacker.	JWP	1
	Fire as a Weapon	Simple Attacks	Shift to very low tech.	XYZ	2
	Fire as a Weapon	with firearms	Multiple weapons/IIDs.	JWP	2
	Force Protection	Armed FFs	Agrees that FF veterans would be a good recruitment pool.	XYZ	3
	Force Protection	Joint Unit Training	Need for proper training and equipment for joint units.	JWP	2
	Force Protection	medical treatment	Need for medical treatment before "all clear."	JWP	1
	Force Protection	One System	Police, fire & EMS in one system.	JWP	2
	Force Protection	PD above Fire	Police caught above fire.	JWP	2
	Group Bias	Breaking Points	Expanding agencies' breaking points with training, and minimizing group/org bias.	JWP	3
	Group Bias	NY-TF1	NY-TF1 does predrills, mobilizations together - relationship builders.	JRD	2
	Group Bias	NY-TF1	NY-TF1 has built better relationships with ESU overall	JRD	1
	Group Bias	NY-TF1	USAR model: same uniform, together in one mission.	JWP	2
	Group Bias	NY-TF1 Equipment	Equipment caches checked regularly, relationship builders.	JRD	2

	Group Bias	One System	increasing stress level at incidents [compared to training].	JWP	1
	Intelligence	Real-time Info	Good idea, PD usually has better real-time intelligence.	JRD	2
	Interdependencies	Armed FFs	Agree that FF military veterans would be a good recruitment pool.	XYZ	2
	Interdependencies	Building Vulnerability	Better if pre-organized than executed ad hoc.	JWP	2
	Interdependencies	Joint Training	At drills, PD wrongly assumes what other agencies can do.	XYZ	2
Preparedness	Interdependencies	Joint Training	If FFs armed, must have high level of training.	XYZ	2
	Interdependencies	medical treatment	Need for medical treatment before "all clear."	JWP	2
	Interdependencies	Mitigation	Must find the best way to mitigate.	XYZ	3
	Interdependencies	More dialogue	Calls for more interdisciplinary dialogue and "hybrid ideas."	XYZ	1
	Interdependencies	One System	Police, fire & EMS in one system.	JWP	1
	Interdependencies	PD above Fire	Police caught above fire.	JWP	4
	Joint Units	at regular A-S	Joint units valid in regular active-shooter with possible darkness, etc.	XYZ	3
	Joint Units	Breaking Point	Smart decision [joint unit] for managers, but has to be tested.	XYZ	1
	Joint Units	Building Vulnerability	Better if pre-organized than executed ad hoc, same with Unified Command.	JWP	1
	Joint Units	Finance	likes integration, but not dedicated team - would be underused and expensive.	XYZ	1
	Joint Units	Hostages	Less enthusiastic about full-time teams, concerned about cross training.	XYZ	1
	Joint Units	Joint Training	If FFs armed, must have a high level of training.	XYZ	1
	Joint Units	Joint Unit Training	Use of police who are volunteer FFs not the answer, need professionals.	JRD	1
	Joint Units	Joint Unit Training	Must have pre-designated positions to work in chaotic situation.	JRD	2
	Joint Units	Joint Unit Training	NYC responders are not ready to integrate at Mumbai-type attack.	XYZ	1
	Joint Units	NYC Attack	Should not wait for a high-fatality event in NYC before making changes.	XYZ	3
	Joint Units	NYC Attack	NYPD has created CRIC teams.	XYZ	2
	Joint Units	NY-TF1	NY-TF1 does predrills and mobilizations together -	JRD	1

			relationship builders.		
	Joint Units	NY-TF1 Training	For joint units, training with PD difficult due to different schedules.	JRD	2
	Joint Units	Opposition	Expect opponents, but sell idea as essential for life safety.	XYZ	2
	Joint Units	Real-time Info	Good idea, PD usually has better real-time intelligence.	JRD	1
	Joint Units	Specialization	Limited specialization may not be best for fast, dynamic incidents.	XYZ	5
	Joint Units	Time	Biggest enemy is time.	XYZ	2
	Joint Units	Training Realism	Training scenarios would have to be as realistic as possible (hirise, etc.).	XYZ	2
	Joint Units	Uniforms	Must figure out uniforms and primary roles before incident.	XYZ	1
	Joint Units	Unit Make-up	Great idea [joint unit] but how? Dedicated unit? Form at incident?	XYZ	1
	Joint Units	Unit Make-up	"Fantastic idea" but standing team or ad hoc (formed at incident)?	XYZ	1
	Leadership	NY-TF1	OEM in charge of USAR.;	JRD	1
	Leadership	Positions	FD/PD supervisors closely control behavior of subordinates.	JRD	1
	Mission Clarity	CIMS	CIMS does not encourage true collaboration, too much gray area.	JRD	3
	Mission Clarity	Joint Training	No core compentency are being challenged, just enhanced.	XYZ	1
	Mission Clarity	Joint Unit Training	Must have pre-designated positions to work in chaotic situation	JRD	3
	Mission Clarity	Positions	Pre-set, explicit positions. All tasks made 50/50.	JRD	3
	Mission Clarity	Priorities	Must figure out priorities w/ people trapped: fire or shoot out?	XYZ	1
	Mission Clarity	Stress	Stress to members importance of groups, explicit instructions	JRD	2
Preparedness	Mission Clarity	Uniforms	Must figure out uniforms, primary job, before incident	XYZ	2
	Mumbai Threat	Armed FFs	Agrees that FF military veterans would be a good recruitment pool	XYZ	1
	Mumbai Threat	at regular A-S	Joint Units valid in regular active-shooter with possible darkness, etc.	XYZ	1
	Mumbai Threat	Brain Storm	Think through possible scenarios with taskforces	JWP	1
	Mumbai Threat	Brain Storm	Work through problems beforehand to uncover new ideas	JWP	2

	Mumbai Threat	Improvisation	Customize and improvise tactics to the threat	JWP	2
	Mumbai Threat	Innovation	Need for innovative thinking when no clear pattern evident	JWP	1
	Mumbai Threat	Innovation	We cannot say that we did not think of this threat [Mumbai-type attack]	XYZ	2
	Mumbai Threat	Joint Training	If FFs armed, must have high level of training	XYZ	4
	Mumbai Threat	Joint Unit Training	NYC responders are not ready to integrate at Mumbai-type attack	XYZ	2
	Mumbai Threat	Mitigation	Must find the best way to mitigate	XYZ	2
	Mumbai Threat	Multiple Shooters	A-S is usually one shooter, terrorist A-S is usually multiple shooters	XYZ	3
	Mumbai Threat	NYC Attack	Mumbai attack in NYC	JWP	1
	Mumbai Threat	NYC Attack	wWth European terror alerts, threat of Mumbai-type attack increasing	XYZ	1
	Mumbai Threat	NYC Attack	NYPD has created CRIC teams	XYZ	1
	Mumbai Threat	NYC Attack	With Joint Units, at least NYC can say it tried to solve the problem	XYZ	2
	Mumbai Threat	Priorities	During attack, FDNY may have to put fire out for PD to proceed	JRD	2
	Mumbai Threat	Simple Attacks	Very low tech	XYZ	1
	Mumbai Threat	Simple Attacks	Low tech is easy to do, with tremendous impact	XYZ	1
	Mumbai Threat	Specialization	Limited specialization may not be best for fast, dynamic incidents	XYZ	4
	Mumbai Threat	Training Realism	Training scenarios would have to be as realistic as possible (hirise, etc.)	XYZ	3
	Novelty	Improvisation	Customize and improvise tactics to the threat	JWP	1
	Novelty	Improvisation	We should prepare based on innovations, not just mistakes	XYZ	1
	Novelty	Innovation	Need for innovative thinking when no clear pattern is evident	JWP	2
	Novelty	Innovation	We cannot say that we did not think of this threat [Mumbai-type attack]	XYZ	1
	Novelty	More dialogue	Calls for more interdisciplinary dialogue and "hybrid ideas"	XYZ	2
	Novelty	NYC Attack	Planners tend to equate highly-unlikely occurrence with impossible	XYZ	2
	Novelty	Recognize Anomalies	Always a defining incident that changes procedures (San Ysidro, Mumbai)	XYZ	3

	Novelty	Recognize Anomalies	Tendency to not for train for the anomaly in hopes it won't repeat	XYZ	2
	Operational Limits	Time	Need to understand risks and incident durations	JWP	1
	Other Models	Military	Suggests a look at military models of integrated members	JWP	1
	Other Models	NY-TF1	NY-TF1 has built better relationships with ESU overall	JRD	3
	Other Models	NY-TF1	USAR model, same uniform, together in one mission	JWP	3
	Other Models	NY-TF1 Training	USAR FD/PD do most training separately (confine space, etc.)	JRD	1
	Other Models	NY-TF1 Training	NY-TF1 police get basic firefighter training	JRD	1
Preparedness	Other Models	Uniforms	all USAR members wear same uniform, ID'ed as NY-TF1	JRD	3
	Political Issues	Finance	likes integration, but not dedicated team - would be underused. Money issue.	XYZ	2
	Political Issues	NYC Attack	Politically, it would be damaging if a city had not prepared for Mumbai	XYZ	1
	Political Issues	NYC Attack	With Joint Units, at least NYC can say it tried to solve the problem	XYZ	1
	Political Issues	Opposition	Expect opponents, but sell as a life saver	XYZ	1
	Political Issues	Possible Fatalities	Can be sold as more people to die if we do not do it (Joint Units)	XYZ	1
	Preplanning	Brain Storm	Work through problems beforehand to uncover new ideas	JWP	1
	Preplanning	Improvisation	We should prepare based on innovations, not just mistakes	XYZ	2
	Preplanning	Joint Training	Incidents are never the same at A-S, concepts and principles are the same	XYZ	1
	Preplanning	Joint Unit Training	Must have pre-designated positions to work in chaotic situation	JRD	1
	Preplanning	NY-TF1 Equipment	Equipment caches checked regularly, also a relationship builders	JRD	1
	Preplanning	PD above Fire	Police caught above fire	JWP	1
	Preplanning	Positions	Pre-set, explicit positions. All tasks made 50/50.	JRD	2
	Responder Adaptability	NYC Attack	Should not wait for a high-fatality event in NYC before making changes	XYZ	1
	Responder Adaptability	Recognize Anomalies	Always a defining incident that changes procedures (San Ysidro, Mumbai)	XYZ	1
	Training/Education	Brain Storm	Think through possible scenarios with taskforces	JWP	2

	Training/Education	Breaking Point	In exercises, discrepancy in what is promised versus capability	XYZ	1
	Training/Education	Breaking Point	Important to realistically claim operational limits in exercises	XYZ	1
	Training/Education	Breaking Points	Expanding agencies' breaking points with training, lowering group/org bias	JWP	2
	Training/Education	Fire/smoke	PD does not train for low light or smoke, or even noise	XYZ	2
	Training/Education	General Training	Idea is to have first arriving patrolman "slow" the situation down	XYZ	1
	Training/Education	General Training	Would be a burden to keep all members trained up	XYZ	1
	Training/Education	General Training	Would be a burden to keep all members trained up	XYZ	2
	Training/Education	General Training	Proposes some type of awareness training for all FFs	XYZ	1
	Training/Education	Hostages	Less enthusiastic about full-time teams, concerned about cross training	XYZ	2
	Training/Education	Joint Tabletops	Joint Tabletops	JWP	1
	Training/Education	Joint Training	Joint Training	JWP	1
	Training/Education	Joint Training	At drills, wrongly assume what other agencies can do	XYZ	1
	Training/Education	Joint Training	Interdisciplinary training must be done at all levels	XYZ	2
	Training/Education	Joint Training	If FFs armed, must have high level of training	XYZ	3
	Training/Education	Joint Unit Training	Use of police volunteer FFs not the answer, need professionals	JRD	2
	Training/Education	Joint Unit Training	Proper training and equipment for joint units	JWP	1
	Training/Education	medical treatment	Need for medical treatment before "all clear"	JWP	3
	Training/Education	Multiple Shooters	A-S is usually one shooter, terrorist A-S is usually multiple shooters	XYZ	1
	Training/Education	NYC Attack	With European terror alerts, threat of Mumbai-type attack increasing	XYZ	3
Preparedness	Training/Education	NYC Attack	Should not wait for a high-fatality event in NYC before making changes	XYZ	2
	Training/Education	NY-TF1	NY-TF1 has built better relationships with ESU overall	JRD	2
	Training/Education	NY-TF1	USAR model, same uniform, together in one mission	JWP	1
	Training/Education	NY-TF1 Training	USAR FD/PD do most training separately	JRD	2
	Training/Education	NY-TF1 Training	Do mobilizations drills with operational, not training, focus	JRD	2
	Training/Education	NY-TF1 Training	NY-TF1 police get basic firefighter training	JRD	2

	Training/Education	NY-TF1 Training	For joint units, training with PD difficult due to different schedules	JRD	1
	Training/Education	Recognize Anomalies	Must train for the anomalies, that do not fit the trends (long term A-S)	XYZ	1
	Training/Education	Recognize Anomalies	Always a defining incident that changes procedures (San Ysidro, Mumbai)	XYZ	2
	Training/Education	Recognize Anomalies	Tendency to not for train for the anomaly, in hopes it won't repeat	XYZ	1
	Training/Education	Specialization	Trend in law enforcement towards specialization of select few	XYZ	2
	Training/Education	Specialization	Suggests instead to bring up training of average patrolman	XYZ	1
	Training/Education	Specialization	Suggests instead to bring up training of average patrolman	XYZ	2
	Training/Education	Specialization	PD has specialized into a corner, too much reliance of special units	XYZ	1
	Training/Education	Specialization	If avg. patrolman trained in A-S, he can mitigate possible school siege	XYZ	1
	Training/Education	Specialization	Limited specialization may not be best for fast, dynamic incidents	XYZ	3
	Training/Education	Stress	Increasing stress level at incidents (compared to training)	JWP	2
	Training/Education	Training Realism	Training scenarios would have to be as realistic as possible (hirise, etc.)	XYZ	1
	Uniformed Appearance	Uniforms	All USAR members wear same uniform, ID'ed as NY-TF1	JRD	1
Prevention	Communications	Terrorist Training	Internet-based training for terrorists (e.g., Times Square)	JWP	1
	Enemy Adaptability	Terrorist Training	Internet-based training for terrorists (e.g., Times Square)	JWP	1
	Fire as a Weapon	Building Vulnerability	Building vulnerability, water systems	JWP	2
	Preplanning	Building Vulnerability	Building vulnerability, water systems	JWP	1
	Preplanning	Building Vulnerability	Building vulnerability analysis, e.g.. standpipes, etc.	JWP	1
Recovery	Accountability	NY-TF1	Any problems are addressed after deployment, but very few	JRD	2
	Delivery	Time	Lesson learned at Columbine/Binghamton was need to move quickly	XYZ	1
	Leadership	NY-TF1	Any problems are addressed after deployment, but very few	JRD	1

	Training/Education	Time	Lesson learned at Columbine/Binghamton was need to move quickly	XYZ	2
Response	Active-Shooter w/ Fire	Hostages	No police commander in U.S. would base decision on "acceptable losses"	XYZ	1
	Active-Shooter w/ Fire	Ops in Darkness	FFs work well in limited sensory environment, unlike avg police officer	XYZ	1
	Active-Shooter w/ Fire	Ops in Darkness	FFs work well in limited sensory environment, unlike avg police officer	XYZ	2
	Active-Shooter w/ Fire	PD above Fire	PD may be lured to upper floors before fires set	XYZ	3
	Active-Shooter w/ Fire	Russian CT	Russian CT more aggressive, expect some losses, but not U.S. policy	XYZ	2
	Capacity	Breaking Point	Limits should not be revealed at the scene	XYZ	1
	Capacity	Breaking Point	If your limits are reached, you are not longer a part of the equation	XYZ	2
	Capacity	Breaking Points	Asking how much can we do? Get there?	JWP	1
	Capacity	Multiple Incidents	Multiple incidents	JWP	1
	Capacity	Traffic, Recall	Traffic issues that would delay recall	JWP	1
	Command	Boro Command	FDNY borough command system	JWP	1
	Command	Breaking Point	May have to split resources based on available information	XYZ	2
	Command	Citywide Awareness	Citywide situational awareness, hastily formed networks	JWP	1
	Delivery	Breaking Points	Asking how much can we do? Get there?	JWP	2
	Delivery	Time	First hour is extremely important, assets will not be place	XYZ	1
	Enemy Adaptability	Fire/smoke	At Mumbai, terrorists knew fire/smoke would slow police assault	XYZ	1
	Enemy Adaptability	IEDs	At Mumbai, IEDs in bags mixed other bags at train station	XYZ	1
	Enemy Adaptability	Simple Attacks	Simpler attacks, instead of CBRN	JWP	1
	Equality	NY-TF1 Positions	USAR teams split by positions, not parent agency	JRD	2
	Equality	Positions	Evenly matched at incidents	JRD	1
	Fire as a Weapon	Breaking Point	Even NYC will not have resources to address multiple A-S attacks	XYZ	3
	Fire as a Weapon	Diesel Fires	Diesel fires to traps FFs during 70s	JWP	1
	Fire as a Weapon	Smoke	Smoke could be advantage to responders, train with TIC	JWP	3

	Fire as a Weapon	Standpipes	Stairwells cut off, sprinklers OOS	JWP	1
	Fire as a Weapon	Standpipes	Stairwells cut off, sprinklers OOS	JWP	3
	Force Protection	Diesel Fires	Diesel fires to traps FFs during 70s	JWP	2
	Group Bias	NY-TF1	USAR brings better cooperation to day-to-day ops among players	JRD	2
	Group Dynamics	NY-TF1	USAR brings better cooperation to day-to-day ops among players	JRD	1
	Group Dynamics	Stress	Stress to members importance of groups, explicit instructions	JRD	1
	Hostages	Demands	Hostages not released in North America on demands	XYZ	1
	Hostages	Hostages	No police commander in U.S. would base decision on "acceptable losses"	XYZ	2
	Hostages	Non-terror Hostages	Endgame for EDP hostage-taker different from terrorist with hostages	XYZ	1
	Hostages	Russian CT	Russian CT more aggressive, expect some losses, but not U.S. policy	XYZ	1
	Hostages	Standpipes	Stairwells cut off, sprinklers OOS	JWP	2
	Hostages	Terror Hostages	In Beslan, use of pressure-switch IEDs suggests no real hostage negotiations	XYZ	1
Response	Hostages	Time	While isolating, containing and holding, we are wasting time	XYZ	1
	Hostages	Time	Waiting can cost lives in terrorist hostage situation	XYZ	1
	Intelligence	Breaking Point	May have to split resources based on available information	XYZ	1
	Intelligence	Real-time Info	Information while event is unfolding, delivery options	JWP	1
	Interdependencies	Ops in Darkness	FFs work well in limited sensory environment, unlike avg police officer	XYZ	3
	Interdependencies	PD above Fire	PD may be lured to upper floors before fires set	XYZ	1
	Joint Units	NY-TF1 Positions	USAR teams split by positions, not parent agency	JRD	1
	Joint Units	Time	First hour is extremely important, assets will not be place	XYZ	2
	Joint Units	Time	Question to who would go in first depending on immediate threat	XYZ	1
	Leadership	Priorities	Question to who would go in first depending on immediate threat	XYZ	2
	Ltd Sensory Environ.	Smoke	Smoke could be advantage to responders, train with TIC	JWP	1

	Mumbai Threat	Breaking Point	Even NYC will not have resources to address multiple A-S attacks	XYZ	1
	Mumbai Threat	Breaking Point	Even NYC will not have resources to address multiple A-S attacks	XYZ	2
	Mumbai Threat	PD above Fire	PD may be lured to upper floors before fires set	XYZ	2
	Mumbai Threat	Time	Waiting can cost lives in terrorist hostage situation	XYZ	3
	Networks	Citywide Awareness	Citywide situational awareness, hastily formed networks	JWP	2
	Novelty	Fire/smoke	At Mumbai, terrorists knew fire/smoke would slow police assault	XYZ	2
	Novelty	IEDs	At Mumbai, IEDs in bags mixed other bags at train station	XYZ	2
	Operational Limits	Breaking Point	If your limits are reached, you are not longer a part of the equation	XYZ	1
	Other Models	NY-TF1	USAR integration is pervasive (share hotel rooms, etc.)	JRD	1
	Other Models	NY-TF1 Positions	USAR teams split by positions, not parent agency	JRD	3
	Other Models	Russian CT	Russian CT more aggressive, expect some losses, but not U.S. policy	XYZ	2
	Responder Adaptability	General Training	Right now, patrolman would not engage active-shooter offensively	XYZ	1
	Responder Adaptability	Smoke	Smoke could be advantage to responders, train with TIC	JWP	2
	Training/Education	General Training	Right now, patrolman would not engage active-shooter offensively	XYZ	2

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APPENDIX B. TACTICAL CONSIDERATIONS

During this study, several tactical issues related to paramilitary terrorism were revealed. Though not applicable to this inquiry, the most relevant points are listed below (in no particular order):

- Child trauma is much different than adult trauma
- Terrorists at Mumbai-style attacks may monitor cell phones or emergency dispatch frequencies, have advanced surveillance in place, or communicate with handlers remotely or in the crowd.
- Contrary to active-shooter case studies, terrorists may switch to night or evening rush hour attacks enabled by night-vision goggles.
- Terrorists use negotiations as delay tactics. Expect absurd demands and rethink the hostage negotiation playbook.
- Compile blueprints of high-profile soft targets (schools, hospitals, hotels, etc.)
- Terrorists may choose isolated, complex layouts to barricade or siege.
- Perimeters must be fluid enough to allow ambulances or emergency vehicles to pass. Perimeters will be hard to maintain, especially if children are involved.
- Entry points will likely be wired with explosives.
- Terrorists increasingly use fedayeen methods (self-sacrifice attacks), where operatives have no escape strategy.
- Learning from previous attacks, hostages will be split up by terrorists to complicate rescue efforts.
- Law enforcement use of tear gas canisters aimed at building interiors may cause fires.

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